DOCUMENT RESUME

ED 028 548 EC 002 962

By-Plowman, Paul D., Comp.; Rice, Joseph P., Comp.
California Project Talent.
California State Dept. of Education, Sacramento.
Pub Date 67
Note-149p.
EDRS Price MF-$0.75 HC-$7.55
Descriptors-Acceleration, Administration, Audiovisual Aids, Community Resources, Counseling Instructional Programs, Educational Innovation, *Educational Needs, Educational Objectives, *Exceptional Child Education, *Gifted, Man Machine Systems, *Program Descriptions, Program Evaluation, Special Classes, *State Programs, Summer Programs, Talent Development, Technological Advancement
Identifiers-California, Project Talent

A compilation of presentations on programs for the gifted includes the following: increasing opportunities for education, notes on Project Talent, talent development and national goals, talent identification in California, problems and recommendations in the area of the talented, innovations in talent development, issues and problems in modern education, influencing educational change, the California state organization for programs for the gifted, the development of Project Talent, a summer school program for the gifted in elementary schools, a counseling instructional program for the gifted, and special classes for the gifted. Also discussed are technology and program development, utilization of community resources, Project Discovery, Project Prometheus, an accelerated primary program, student response systems, and the design of an automated counseling system. (RP)

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PROJECT TALENT
V
CALIFORNIA

California Project Talent

CALIFORNIA STATE DEPARTMENT OF EDUCATION
MAX RAFFERTY-Superintendent of Public Instruction
Sacramento 1967

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CALIFORNIA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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California Project Talent

Compiled by

PAUL D. PLOWMAN and JOSEPH P. RICE
Codirectors of California Project Talent

FOREWORD

California public schools have the major responsibility for making certain that every child in the state has the opportunity to acquire a sound basic education. And in meeting this responsibility, the schools should make it possible for each pupil to learn at the rate and to the full level that his ability permits. In addition, every pupil should be helped to understand himself and to know his abilities, and he should be counseled regarding how he can utilize his abilities to the best advantage. Although the schools have a major responsibility for providing this help, the home must also share the responsibility.

Ways in which the schools can meet these responsibilities, especially with gifted children, have been defined by California Project Talent. The project has also demonstrated ways in which programs for the gifted can be developed and operated successfully.

This publication is a compilation of the presentations made at the California Project Talent Western Regional Dissemination Conference. School administrators and others particularly concerned with programs for the gifted should profit from studying the information and ideas presented in these proceedings of that conference.

Max Rafferty

Superintendent of Public Instruction

PREFACE

The school districts in California have been providing specialized programs for mentally gifted minors for several years, and the Department of Education has a legal responsibility for assisting and advising school districts in the "establishment, development, and improvement" of such programs.

The number of pupils enrolled in programs for mentally gifted minors has grown steadily during the past several years, and approximately 100,000 pupils now receive instruction in programs for the gifted. With the increase in participation has come added attention to all aspects of improved program quality. Some of this attention has been reflected in the conduct of California Project Talent, a broad research and demonstration program designed to raise the general level of public school offerings to mentally gifted minors.

The results of California Project Talent were presented at a western regional conference, which was called to assess the current state of talent development in California and in the nation; to report recent developments in educational programming; and to explore possibilities for refining, expanding, and promoting talent development programs.

The conference was sponsored by the California State Department of Education and by the U.S. Department of Health, Education and Welfare, and the meeting was held in San Francisco on November 15-16, 1966. The meeting was endorsed by the California Association of School Administrators, the California Teachers Association, and the National Education Association.

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CONTENTS

Page

Foreword iii
Preface v

SECTION 1 -- OVERVIEW: TALENT DEVELOPMENT. 1

Increasing Educational Opportunities -- Charles H. Shreve 3

Notes on Project Talent -- Howard M. Kreitzer 9

Total Talent Development and National Goals -- J Ned Bryan. . . . 12

Talent Achievement in California -- Mrs. Talcott Bates 22

Problems and Recommendations in Talent Development 26

SECTION 2 -- INNOVATION AND CHANGE IN TALENT DEVELOPMENT 31

Innovation in Talent Development -- Paul D. Plowman 33

Issues and Problems of Talent Development -- William McGowan . . . 41

Influencing Change in Education -- Charles C. Halbower 46

SECTION 3 -- CALIFORNIA PROJECT TALENT 59

Current State Organization for Talent Development -- Donald Mahler . 61

California Project Talent: A Unique Educational Development -- Joseph P. Rice, Jr. 65

Individual Placement Project--An Accelerated Program for Intellectually Gifted Pupils, Utilizing the Summer School -- Joseph P. Rice, Jr. 74

Counseling-Instructional Program for Intellectually Gifted Students -- Louise M. Bachtold 80

Special Classes for Intellectually Gifted Students -- Mildred C. Robeck 87

SECTION 4 -- EXEMPLARY PROJECTS AND PROGRAMS 103

Learning Systems in Inquiry and Discovery -- Lawrence V. Willey, Jr. 105

Using Community Resources -- John M. Huffman 107

Project Discovery -- John Belforte. 112

PROJECT TALENT
I
SECTION
CALIFORNIA

Overview: Talent Development

Increasing Educational Opportunities

By

Charles H. Shreve
Regional Director
U. S. Department of Health, Education and Welfare

As Regional Director of the Department of Health, Education, and Welfare, it is a personal privilege to welcome you to San Francisco . . . . It is a particular pleasure to welcome those of you who have come so far, from outside our Region and as far away as New York, Connecticut, Massachusetts, Minnesota, and Pennsylvania, as well as our neighbor states of Colorado and Utah, who have joined with the representatives of the seven states in our Region to discuss one of the major, though sometimes neglected areas in the field of education.

As personal representative of Secretary John Gardner, I also want to extend to you his greetings, and his regrets that press of duties will not permit him to be with you. Secretary Gardner, as you know, is the first Secretary of the Department of Health, Education, and Welfare to come from the field of education. In the little over a year that he has been Secretary, great strides have been made in reorganizing our sprawling group of interrelated agencies, the Public Health Service, Office of Education, Social Security, Welfare Administration, Food and Drug Administration, and all the others, into a cohesive, coordinated and smoothly functioning team.

The tremendous stream of legislation in these fields in 1965 and 1966 give us an opportunity and a challenge to accomplish more in the next few years than has been accomplished in the past twenty or thirty years.

As you know, Congress placed great burdens on us last year to expand educational opportunity. This year, despite the war, they did not lighten the load; they increased it.

Every agency in the Department of Health, Education, and Welfare is straining to meet the demands placed on it. In 1961, the budget of the Office of Education was $539 million. This year, Congress appropriated $3.6 billion, an increase of almost 600 percent.

The effect of greater investment in education growing out of recent legislation will be to reduce greatly the numbers of educationally disadvantaged. Currently, one million students drop out of high school before completion every year. The unemployment rate for dropouts is 27%, compared to 13% for those completing high school. By reducing this rate one-third by 1970 and cutting it to half by 1975, there will be 3 million fewer school dropouts over the next ten years.

In the next few years the nation will accelerate our investment in increasing educational opportunities for Negro students and other minority groups. This should make it possible by 1975 or 1980 for every high school graduate to have the actual equivalent of a good high school education. As it is now, many complete 12 years of schooling in inferior schools and emerge with the equivalent of perhaps a seventh grade education and become part of the pool that is last hired and first fired.

By the mid 1970's there probably will be close to ten million young men and women in post-secondary and higher education--in colleges, universities, junior colleges, and technical institutes. We will have moved from 12 years of free public education to 15 years of free public education--kindergartens in every elementary school, and junior colleges in every sizeable community. Scholarships and loans will be available so that financial barriers will not restrict any youngster with ability from completing college.

And the quality of education will be vastly improved at every level. School curriculums will be enriched through cooperative programs with colleges, museums, libraries, public and private cultural and educational agencies and groups. The thousands of elementary and secondary schools without library books today will have them in ample supply for every student.

Supplementary educational centers will provide special programs for the academically gifted, for the handicapped, and furnish other resources not available in the typical school. There will be child development specialists in every school who will identify the emotionally disturbed child at an early stage and help prevent the Lee Oswalds of the future. Trained guidance and counseling personnel will be available in every school to help our boys and girls find their way into stimulating and creative activities of significance and value.

School segregation, whether effected by open discrimination, gerrymandered school districts, or segregation arising from ghetto housing, will have crumbled before the combined forces of legal barriers to official segregation, open housing policies, urban redevelopment, metropolitan planning, increased employment opportunities, and not least of all, the moral force of enlightened public opinion.

Educational television will have developed and have expanded all over the nation with an adequate educational television system in every state. Tomorrow's television audiences will have a real choice of stimulating high-grade shows of artistic merit, creativity, and educational distinction rather than present second and third-rate offerings.

Computers will have been developed that translate foreign languages, assist youngsters with homework, or form the heart of electronic libraries delivering copies of pages of books into your living room via closed-circuit television.

What I am suggesting is that we will have a social structure that is at once more diversified and more interdependent--a more truly pluralistic society. All in all, there will be more choice for every individual. Diversity and interdependence must be buttressed by intelligent cooperation between business and government; more effective governmental cooperation among the local, state, and federal levels; and, among public, private, educational, philanthropic, and community institutions.

Increased freedom of choice will contribute to, and be reinforced by, a strengthening of the role of the family, a strengthening of parental responsibility, more education for parental obligations, and more adult education. Schools and colleges will be open evenings and Saturdays and Sundays to serve the needs of the whole community. Every family will have access to more good books and more music, more exposure to and more time for, the arts and the theatre. A wide range of new opportunities and programs from Head Start to the New National Foundations on the arts and the humanities will furnish the tools with which we shall overcome the cultural deprivation that today blights lives in millions of American homes in rural and urban slums.

Now let me talk a bit about the Department that conducts these programs. It isn't easy to visualize all of the work of the Department of Health, Education, and Welfare--even when you work there every day, as I do. In his special message to the Congress early this year on health and education, President Johnson called HEW the "department of people."

It is people. It is, first of all, people providing services--doctors, nurses, scientists, social workers, teachers--at work in hundreds of occupations and in thousands of places throughout the country. A quarantine officer rides out in a launch to inspect a ship from South America, another sprays insecticide into the hold of a plane from Asia. A nurse far above the Arctic Circle starts her rounds by dogsled. A social worker in South Carolina puts her "O.K." on a piece of paper, and a young widow has the money to keep her family together. Laboratory scientists in Washington check on the safety of a new drug, or a possible cancer cure, or a lipstick.

Our Department is also concerned with information about people. It gathers a great deal of information on its own, and it is a major source of research funds for the acqusition of knowledge about people, their needs,and their problems.

Finally, the Department is a resource for people. It provides the means to help people help themselves. It helps build hospitals, libraries, and research centers. It helps train teachers and scientists. It helps to demonstrate and apply new knowledge. And it helps state and local groups meet the needs they have identified in their own communities.

Thus, more than 90 percent of the funds appropriated to the Department are spent by others. This year we will spend $10.5 billion from general revenues and $23 billion from the Social Security trust funds. In one way or another, this money will find its way into every community in the Nation.

The Department has more than 200 identifiable programs--carried out by nine constituent agencies--and a staff of about 99,000 people. These programs may be shown in separate boxes on an organizational chart, but they are increasingly interrelated. They don't just touch each other, they are not simply connected by dotted lines on the chart, but they are interwoven by the very nature of the problems they are designed to combat.

Consider mental retardation, one of the problems to which we have been devoting considerable attention. Almost every agency of our Department has some involvement with this program. It cuts across categorical lines because the problem is so complex and because it must be attacked from so many angles--research, construction of facilities, training of personnel, health and educational services, and income maintenance. We work together through a formal coordinating committee and through a variety of informal and day-to-day working mechanisms. We work together so that you in the states can have a single source of contact on mental retardation.

Although I am not a specialist in your field, I want to leave three ideas with you.

First, at least part of the time we have to think of our educational efforts in nationwide terms. Not only are we engaged in a common effort, but all the various parts of our educational system are interrelated and affect one another.

The unemployment rolls of St. Louis, Detroit, and Chicago include men and women who were inadequately educated in the schools of Alabama and Mississippi. When northeastern states fail to provide enough tax-supported higher education for their high school graduates, those young people crowd into public institutions from Ohio to California. When a scientist in Cambridge, Massachusetts, develops a new physics curriculum, it affects every high school in the nation. When you and your fellow Americans, through your elected representatives, bring about federal educational activities, then our Department becomes a factor in your lives.

Second, although we have in effect a nationwide educational system, it is by no means a centralized one. The local school district is the main point of decision and initiative in the system. Increasingly, however, we see the state and the federal government as helpful allies to the local district. When the federal government acts, it acts through a series of partnerships.

Our Department works with all the states and with many of their political subdivisions. We work with the nation's 29,000 school districts, with almost all the institutions of higher learning, with hospitals and nursing homes, with almost every major professional association, and with many of the Nation's voluntary agencies.

These partnerships will work only if all partners enjoy continuing strength and vitality. All of them must play a creative and independent role. And that is where you come in.

You owe it to yourselves and to the system to insure that your state agencies for dealing with health and with education are well led, that your universities know their role and are prepared to protect their own autonomy, that your local school boards are vigorous and effective. If any of them are weak, strengthen them!

Third, the problems we face today cannot be solved or even adequately understood within the narrow horizons of a particular professional specialty or a particular kind of institution. To solve the problems of poverty, dropouts, rising enrollments, aging, mental retardation, juvenile delinquency, or any of a host of other basic issues of the day, various professional groups are going to have to collaborate freely and wholeheartedly. Various kinds of institutions are going to have to set aside their vested interests and explore new ways of working together.

Only through such collaboration will a community or state be able to bring all of its professional and institutional resources to bear on these problems.

It is an honorable thing to pursue your own professional field with all the skill and wisdom you possess. But when a problem cannot be understood in terms of your specialty alone--and that will be true of most of our complex problems--it is your duty to seek out the ways in which you can work with professionals in other fields. Innovation and cooperation are the keys to success.

I have directed these points primarily to you as educators. But they are equally valid for health specialists, social workers, and the whole gamut of professional and subprofessional groups which work with people. No one field can go it alone.

One final word: As most of you know, we attach a special significance to the great efforts we're making in the social field today. As I see it, the Great Depression and the Second World War forced us to think very hard about the kind of world we wanted and led us to examine our own society with an unsparing honesty we had never before allowed ourselves.

When we found ourselves, after World War II, heading into a period of unprecedented prosperity; we reached the conclusion that national affluence wasn't enough.

We concluded that what we really wanted was a society that cared about the individual, a society designed to nurture the individual. And as we looked around us, we discovered that we had some herculean tasks to perform if we were to achieve that kind of society--tasks in civil rights, in the attack on poverty, in revitalizing our schools, in caring for our aged, and so on. Not the least is the problem of talent development of the gifted child.

The result is that we have in recent years initiated a social revolution of substantial dimensions. And the shock troops in that revolution are such people as teachers, guidance counselors, social workers, because they are, after all, the ones whose business it is to help the individual grow and develop.

Let me hasten to acknowledge that the challenges before us are tremendous. Congress has built the legislative foundation and has provided the money with which we can improve our health, education,and social services. But the most difficult tasks are still ahead. For unless these new programs are well administered--unless the dream of freedom of choice and equality of opportunity are translated into reality--we will have failed.

The concept of the Great Society is one of the great philosophic ideas in the Nation's history. Again and again, the President has expressed his belief that every boy and girl, and every adult, should have the opportunity to get as much education as he or she can handle; that poverty must be abolished; that the best of health care must be available to all. These are goals and purposes that are at the very heart of the concerns of a Great Society.

Like all great ideas, these goals will take many years and much work before they are realized in our institutions, our social structure, and among all our people. We are realists enough to know we will not have 100% success. But the foundations have been laid, the course and direction charted. It isn't going to be easy, and we have an agonizingly long way to go, but we're on our way. With your help and that of the leaders in the other related fields, we'll make it.

Notes on Project Talent

By

Howard M. Kreitzer
Regional Representative
U.S. Commissioner of Education

The most valuable contribution I can make is to speak to the broad aspects of the efforts to define, discover, develop, follow, evaluate, and disseminate the results of efforts to utilize in a better manner the talents of American people.

Each of us, as well as other informed persons, has a pretty good idea of what we mean by talent. Likewise, every teacher has a mental concept of what he thinks talent is. Teachers also develop an ability to recognize in students this ability. Of course we all well know that every parent can recognize talent by the time his offspring is nine months old. However inaccurate these diagnoses may be, they are the epitome of accuracy when compared to estimates of grandparents. Parenthetically, one wonders if life for people involved in education would not be much more pleasant if those who can readily identify and label talent by whatever name were quite as adept at identifying and labeling those at the other end of the scale. This ignoble task, however, is reserved for the teacher through an imprecise marking system or for the students' peers to attach the label "Johnny isn't too bright."

The difficulty with defining talent in generalities is that generalities are not susceptible of precise measurement. The problem of definition is further confused by the lack of uniform terminology. A hurried review of the meager literature on the topic available in the western region office of education indicates five terms used synonymously. They are: talent, gifted, excellence, superiority, and creativity. As you can see, in general they all involve common elements, but each term varies in meaning slightly from every other term. This lack of preciseness in definition creates many of the difficult problems encountered in working with other aspects of talent development.

Even if we could recognize every student with talent, the problem of discovering the talented in a population of 185 million is no small task.

Before preconference luncheon meeting California Project Talent, November 14, 1966, Jack Tar Hotel, San Francisco, California

The most commonly used methods involve teacher referrals, group intelligence tests, group achievement tests, honor roll membership, and individual intelligence tests. We have been struggling with this problem since 1921 when Terman and his associates began a longitudinal study on the characteristics of gifted children. The literature is replete with minuscule efforts to identify the talented student. One of the first efforts on a national basis was Project Talent conducted by the University of Pittsburgh in 1960. This project will also be one of the first large scale efforts to follow a statistically significant number of students for a sufficiently long period of time to draw reasonably valid conclusions. So far as I am informed, all of the significant effort to develop talent after it has been discovered has been confined to the school. Some attempts have been made to evaluate the efforts of the out-of-school environment, but attempts to change the environment have been quite recent and unfortunately have not been educationally initiated. One factor that appears to becoming more favorable is the national climate or attitude toward education. A brief mention will be made of this later. This change in educational climate is evidenced in many dramatic and even bizarre ways. Among them are Head Start, Upward Bound, Riots, School Strikes, Attacks on the Physical Plants, etc. During this conference I am sure the in-school methods to develop talent will receive considerable emphasis. I hope some attention will be given to the out-of-school environment. Given another fifty years at the current rate of acceleration of the acceptance of education, we should be able to say that being bright is respectable and socially acceptable. The dissemination and acceptance of research are the two most frustrating problems in the development of talent programs. Perhaps Shannon in 1957 presented the acceptance situation as clearly as possible when he reported "many educators prefer not to listen to research. It may say things that they are not willing to listen to. This seems to be true in the area of 'acceleration' under discussion." Until there is a will to put research findings into action, they will rest quietly in scholarly journals where they will be rediscovered at some future and more favorable time by someone who will no doubt express some astonishment at the lack of attention paid to this research.

Perhaps this will not be the situation forever. Recent inventions have made possible the compilation and analysis of large volumes of information. Congress has passed legislation to support many projects among which is ERIC, the Educational Research Center. This is the first nationwide, comprehensive information system designed to serve American education. The basic objective of ERIC is to provide information on reliable, current educational research and research-related materials inexpensively to a wide variety of audiences: teachers, administrators, other education specialists, researchers, public officials, commercial and industrial organizations, and the public. In addition to Central ERIC located in Washington, there are 12 external clearinghouses--each responsible for a topical or subject matter area. Within Region IX are two external clearinghouses: one on junior colleges located at UCLA and one on Educational Administration at the University of Oregon. This system,if efficiently operated,should improve the dissemination of educational information.

Nor is ERIC the only provision made for educational progress. In the 174 years prior to 1963, Congress passed six basic education bills. The first was in Abraham Lincoln's administration, followed by one in Woodrow Wilson's, one in Harry Truman's, and three in President Eisenhower's.

In the past three years Congress has passed 18 basic education bills. In the first 174 years, Congress invested 5 billion, 800 million dollars for education. The 89th Congress invested 9 billion, 600 million dollars, almost twice as much as all the other Congresses put together. This Congress has provided assistance to children from 4 or 5 years old in Head Start; through elementary, secondary, vocational, higher education; and to professional education to a PhD if the student can absorb it. With this kind of assistance it is incumbent upon the educational community to make of education everything that it can become.

Total Talent Development and National Goals

By

J Ned Bryan
U. S. Office of Education

At this moment, Gemini IV is in the final stages of preparation for another of man's attempts to explore an environment beyond the immediate confines of his native planet. At this moment, we, in this opening session of the California Project Talent Western Regional Conference, are met to initiate a sharing of our observations, insights, and conjectures concerning ways of meeting the educational needs of today's talented children and youth: those whose progenitors have freed man from the confines of a gravity which have bound him to an earth from which he could only gaze in wonder and speculation. We are met to explore the needs of these children and youth who must be in the vanguard of those who look about them as well as up. The goals to which they aspire must involve not only the quest for knowledge to illuminate man's dreams but the insights and skills to alleviate his heartaches as well.

Briefly I plan to share with you some of the concerns, some of the developments, and some of the unresolved issues that relate to talent development and our national purpose. During the NEA Convention in Miami Beach earlier this year, John W. Gardner, Secretary of Health, Education, and Welfare, listed what he believed to be the ten most important problems facing our society today as:

1. Building an enduring peace

2. Helping the developing nations

3. Controlling the world's unbridled population growth

4. Improving equality of opportunity in America

5. Creating an educational system that will provide the maximum fulfillment for the individual

6. Bringing new life to our cities

7. Improving our natural environment

8. Managing the problems of government

9. Using our knowledge of economic growth wisely

10. Organizing our technological society to allow the individual to flourish[1]

Now, if we are to mount an effective attack upon problems such as these, it is reasonable to expect that the most competent, imaginative, creative, and dedicated individuals in our society must be brought into the fray. Thus we, as educators and concerned laymen, must be committed to total talent development if today's children and youth are to be equal to tomorrow's tasks and our national goals. Such total talent development must be conceived in terms of the total environment, both school and non-school; must involve educators, parents, leaders in government and business, and members of the professional world. Such an effort must encompass both identification and nurture, must take into account the welfare of the individual and of society, and must make it possible for the less able to reach upward.

Gardner has identified the problems but what of the goals and how do they relate to the individual? As an exercise in examining this relationship let us postulate the primacy of big goals over little goals. Now on the face of it, this is a rather inane statement since we have defined neither big nor little goals. Perhaps, however, we can make such a postulate rational. The goals of a society, be it open or closed, may be considered to be big goals. The goals of the individual, be they consonant with or in conflict with those of society, may be considered to be the little goals in that as a rule they tend to affect fewer people. Let us briefly explore one or two facets of interaction between the two.

In a totalitarian society, the goals of the state are supreme, and talented individuals are expected to plan their lives, or have them planned, so that the state is served. In an open society, the individual is theoretically free to choose his goals. Does a democratic society then have the right to demand that its bright young people prepare themselves to become highly efficient, skilled, dependable, readymade cogs designed to serve its needs? In a democracy faced with technological and ideological challenges from within and without, do talented individuals have the right to refuse to use their talents to further the ends or goals of society? Should talented individuals be free to refuse to use their gifts to any end--to let them atrophy through disuse? As professional educators and as concerned laymen, what ethical responsibilities do we have if and when we intervene in the lives and purposes of the gifted through the process of total talent development?

The Pilgrim fathers found it necessary to require work of those who would eat. In the views of some, we today must require our most able youth to become the scientists, mathematicians, lawyers, doctors, statesmen, artists, and philosophers we so sorely need for the survival of our way of life. But how can this be done in a democracy?

Experience teaches us that boys and girls, men and women come in assorted sizes, shapes, and conditions. Politically and socially, so egalitarians tell us, all members of this heterogeneous group of individuals are, or should be, equal. Certainly from the viewpoint of most ethics they are, or should be, equally valued as human beings. Nevertheless,as individuals having unequal potentials,they have, as expressed in the Biblical parable of the talents,[2] unequal responsibilities. In totalitarian societies the gifted individuals are frequently given preferential treatment because of the contribution they can make to the state. In a democracy it would seem important to distinguish between preferential treatment under the law, preferential social treatment, and specialized educational treatment designed to develop high ability.

Let us think about this question: Should a gifted youth, capable of making major contributions to society, be given the same education as the youth with severely limited ability, who at best will learn to care for himself? One position might be that society hurts itself when it fails to provide maximal educational opportunities and challenges for the gifted youth, while it has little to lose in neglecting the incapable youth. But again social justice demands equal educational opportunities. The question of ethics and of educational policy, however, are not parallel. Equal and the same are different concepts. It has been pointed out that nothing is so unequal as the equal treatment of unequals.

But back to big goals and little goals. Perhaps the goals of a democracy become the goals of the gifted individual when he has the information and the insight to see society's objectives in terms of his own best interests; few are willing to undertake the selfless efforts of a Livingston or a Florence Nightingale. While the big goals of a democracy may not be imposed upon the gifted individual, he may be given the opportunity and challenge to develop his talents to the full in schools and colleges, where excellence is expected and practiced, where scholarship is made a way of life, and where gifted peers achieve at a high level. In such an environment he may compete as in tennis, cooperate as in football, or go it alone as in golf, but his goals will increasingly reflect an understanding of the larger purposes of the society of which he is a part. I, for one, have faith that such gifted individuals will, in the main, choose personal goals in keeping with the goals of democracy.

Thus, in answer to our hypothetical questions, it seems reasonable to suggest that in a democracy we have no right on the one hand to mandate individual goals,and that on the other hand a gifted individual has no right to be profligate with his talents. Thus, as educators and concerned laymen in a democratic society, we have the responsibility to identify the talented individual and to nurture him in an environment in which he is free to choose his goals with full knowledge of alternatives and consequences. His goals must be chosen as a result of information rather than misinformation or ignorance.

Now let us return to the Secretary's list of problems. Two are particularly pertinent to this conference: number five, "Creating an educational system that will provide the maximum fulfillment for the individual";and number ten, "Organizing our technological society to allow the individual to flourish." With regard to number five, I would like to call your attention to two studies that have explored specific populations of talented individuals and two others that have examined efforts to provide more effective educational experiences in disciplines usually undertaken by the talented. Because you will have an opportunity to learn about the California projects in some detail, I have chosen these examples from other parts of the nation.

One class of talented youth often forgotten is that of the dropout. Joseph French, in the introduction to his recent study of high school dropouts of high ability, notes that:"For years, and in spite of research findings (or because of them), the stereotype generally held of a dropout has been that of a non-white male of low intellectual ability who flunked out of school. He was further characterized as the product of a broken lower-class home and believed to be either emotionally disturbed or socially maladjusted. Research findings of the last few years have shed much light upon this misconception. It is now general knowledge among the well informed, for example, that dropouts vary widely along such dimensions as intelligence, academic performance, race, socioeconomic status, and so forth. Awareness that such individual differences do exist leads naturally to investigations of dropouts grouped along various dimensions."[3]

French's study, which was done in Pennsylvania, used a sample of 125 male and 81 female dropouts and a like number of male and female persisters of comparable IQ's, neighborhoods, and grade levels. The mean IQ of the dropouts studied was 117.6,with a range of 110-140. It should be noted, however, that due to efforts to keep all youth in school,only 7.8 percent of the Pennsylvania dropouts were found to have IQ's of 110 or more.

In examining the expressed reasons for leaving school, French found that "discontent with the school setting" provided four categories: (1) schools fail to prepare students for the real world either in terms of academic specialization or in specialized training in vocational areas; (2) the level of student involvement in planning his or her curriculum is too low,and there are too many required courses; (3) there is too great an emotional gap between the dropouts and their teachers; and (4) there is an incompatibility of the dropout with the "system" or educational approach of the school. As one perceptive dropout expressed it:"My personal opinion is that schools are being run more like factories,with the end product a person designed like the school thinks he should be. If a student doesn't match up to what the school wants, he is not given half the chance of a student who is making the grades and is conforming."[4] It is also interesting to note that female persisters looked to the teacher as a model two to three times as frequently as the female dropout and that the male dropout indicated that he considered no one to be a model almost three times as often as did the male persisters.

The study has some significant implications for the curriculum. Because nearly 80 percent of the dropouts of all intellectual levels were in vocational, general, or commercial programs, it seems that attention must be directed to those curricular offerings and to the school activities available to students enrolled in them.[5] "Not only do the data collected in this study suggest a need for curricular revision in keeping with the needs of intellectually above-average youth in non-college preparatory programs, but more strongly these data point to a need for developing means of providing for feelings of belonging, acceptance, and recognition for students in these programs."

Two additional observations tell us a bit more about high ability dropouts. One, they do not, as we often assume, start working for money earlier than persisters, and two, they do not move from one school or neighborhood more often than those students who graduate. Rationalizations based on untested assumptions make it all too easy to consider the college bound and forget those highly capable youth who may for good and sufficient reasons take a path other than college to fulfill their promise. Now let us look to another study which deals with a different talented population.

Paul R. Ackerman used a small rural high school in Kansas (241 pupils and 16 faculty members) as the setting for a _Demonstration of the Significance of a Consultant-Teacher for the Gifted._[6] Twenty students whose IQ's ranged from 119 to 150, with a median score of 128, and whose ages ranged from 13.5 to 17.0 were provided with (1) a _Resource Room_ in which they were offered two-hour blocks of time in which to carry out projects under the supervision of a teacher-consultant of the gifted; and (2) two _Seminars_: one for freshmen and sophomores, the other for juniors and seniors. Almost all of the students were considered "underachieving" in terms of expected performance levels as determined by IQ.

The teacher-consultant spent part of his time with an independent studies program and the remainder of his time in assisting teachers to enrich their classes for the gifted students. During the seminars, along with much practical emphasis on skill-building, academic planning, and the like, students examined such topics as "The tools of achievement" and "How knowledge progresses."

The study demonstrated (1) that the teacher-consultant in a small rural school was able to improve instruction as evidenced by improved study skills, wider repertories of reading content, and improved vocational and personal goal planning; (2) that if a teacher-consultant is to be supported by a single school,it must make a commitment to a larger per pupil cost, but that such action would be the least expensive of all possible special education classes; (3) that the adolescent personality needs, at least in this school, were such that independent study could only be given after an initial period of structure and discipline; (4) that these gifted rural secondary school youths were such that the teacher-consultant found it necessary to provide "remediation" of study skills and academic background before attempting an intergrative curriculum; (5) that an intensive inservice education program involving both faculty and teacher consultant was necessary to establish rapport and reduce professional resistance to such a program; (6) that parents should be informed about the program and actively involved in its support; and (7) that the teacher-consultant should demonstrate scholarly aptitude, the ability to carry out significant independent research, and should, if possible, have been an honor student at some time during his academic career.

Let us now turn from studies related to target populations to two that were concerned with disciplines and programs designed for the talented. Last May, Goldberg, Passow, Camm, and Neill published a final report of their study of *A Comparison of Mathematics Programs for Able Junior High School Students*.[7] This study was designed, at least in part, to compare the effects of treatments involving *Standard* mathematical content found in textbooks prior to 1957, *Contemporary* course materials developed by special committees or commissions since 1952 ("new" math), a *Normal* teaching-learning pace, an *Accelerated* teaching-learning pace, and an *Enriched* content. In a Standard-Enriched course the content found in most commercial textbooks for seventh and eighth grade arithmetic and ninth grade algebra was enriched by units such as "The Beginning of Numbers" and "Introduction to Mathematical Structure." In the Standard-Accelerated program seventh and eighth grade arithmetic was completed in the seventh grade, first-year algebra in the eighth grade, and second-year algebra or plane geometry in the ninth grade. SMSG-Normal (School Mathematics Study Group) classes followed the SMSG materials at the pace intended by the authors. SMSG-Accelerated classes covered a four-year sequence in three years. Two groups used units from the University of Illinois Committee on School Mathematics (UICSM) materials. Data were available for the three years of the study from 37 classes and 868 pupils with IQ's above 120.

An analysis of the data collected in this study provides some interesting insights for those concerned with the development of talent--at least in terms of mathematics at the junior high school level. Pupils exposed to more, and to more varied knowledge, through acceleration learned more and retained more than those in the normal programs. Such data, it would seem, "reinforces the belief that able youngsters can be taught more and more advanced content at earlier ages than curriculum developers often consider possible or desirable." The data also "helps to allay some of the fears of those who contend that an accelerated pace will lead to superficiality and that pupils will lack the depth of understanding which would result from "horizontal enrichment."[8]

The authors state: "It is especially interesting to speculate on the causes of the consistently poor performance of the Standard-Enriched program. While the emphasis in the normal sequence was on problems which have 'social utility' and on the use of textbook models or pretaught algorithms in the solution of problems, these pupils were, nevertheless exposed to some 'enrichment' units derived from the concepts and content of contemporary mathematics, similar to those found in the SMSG and UICSM programs. In addition, the special units dealt with contents generally reserved for later grades and were, thus, accelerated in nature."

"Why, then," the authors continue, "did the Standard-Enriched pupils fail to apply these learnings to the test questions, their 'own' as well as those based on the contemporary programs?"

"The explanation probably lies," they suggest, "in the discontinuity between the enrichment material and the standard course of study. Although the Standard-Enriched pupils were exposed to a variety of 'new' and relatively advanced concepts, these never became an integral part of their work and neither grew out of what preceded nor led on to the next phase of a sequential, ordered program. Thus, the enrichment units remained encapsulated; independent of the main instructional sequence."

"To the extent that the approach followed by the Standard-Enriched program fairly exemplifies the concept of enrichment 'by addition' the results of this study," according to the authors, "cast serious doubts on the effectiveness of such an approach."

The Contemporary-Accelerated program appeared to produce the best results in terms of mathematical achievement. The Standard-Enriched, which was the least successful in producing achievement, was, surprisingly, the best in promoting more positive attitudes toward mathematics and on self-rating measures.

Briefly let us examine a second discipline. Materials produced by the Carnegie Institute of Technology Curriculum Study Center in English for _A Senior High School Curriculum in English for Able College-Bound Students_ illustrate contemporary efforts to provide more effective educational experiences for the talented.[9] The field of English was defined to encompass three areas of study: literature, composition (or communication), and language. The core of the program is literature,with composition and language organized around that core. Literature is defined as "mankind's record, expressed in verbal art forms, of what it is like to be alive." During each of the tenth, eleventh, and twelfth grades, the talented students "not only look at a different body of literature but examine it from a different point of view." Furthermore, according to the authors, "each year builds on what went before, and the approach to the literature demands even more perceptive responses. The total program...is...sequential, cumulative, and spiral."[10]

The rather extensive body of material developed through this project has been tried out in cooperating high schools, revised, tried again, and evaluated. Evaluative findings suggest that the program might, as the authors hope, "contribute toward defining a standard for high school English which colleges may consider in designing their freshman courses--for able students--so that learning may continue to be sequential and cumulative."[11]

In total talent development, then, we are beginning to examine both the populations to be served and the curricula to be used. The road ahead is long, difficult, at times obscure, but not impossible of achievement.

In a different vein let us return to the Secretary's list of problems where number ten, "Organizing our technological society to allow the individual to flourish," raises both the hope and the fear of automation in our schools. Computer-assisted instruction can make a vast new world of information and relations available to the talented individual,and it can relieve the teacher for the far more important role of engaging in intellectual discourse with the gifted.

I recently saw a very simple computer program designed to present fifty number combinations, one at a time, in a completely randomized order. In this program the pupil responds to, let us say, the addition of two numbers flashed on a video screen by typing the sum. In less than one-tenth second the pupil knows whether his response is correct or incorrect,and the combination is replaced by another combination which has been randomly selected. When a given combination has received five successive correct responses,it then is deleted from the program and only those requiring additional drill remain. No teacher can provide this kind of individual attention, immediate response, and reinforcement. Sophisticated computer programs of much greater degrees of complexity and diversity are now in being and in process.

The computer need not be dehumanizing. Indeed the computer and our technological society offer us new opportunities which can free not only our talented individuals, but all mankind to undertake the human tasks that relate man to his fellow man. If we as a nation fail to use the new opportunities which technology offers us, if we as educators and citizens do not use the many media available to us to reinforce and restructure educational environments so as to provide increasingly for flexibility and individualized attention, and if we fail to assess correctly the human role of reflection, constructive discontent, and value orientation, let us at least admit that it was man and not a technological society that let men down.

It is inevitable that our efforts to provide total talent development within the context of a democratic society will encounter differences of opinion, errors of omission and commission, lack of specificity, and too often bad judgment. Excessive pressures on the talented may lead to dishonesty, overwork, a negative self-image, and perhaps most damaging of all a deadening conformity. The challenge,however,is too great and the stakes too high for us to fail for want of an effort on our part. In this conference we will learn of some of the gains that will prepare today's talented children and youth for tomorrow's contests.

National concerns form the basis for national goals; goals of peace and brotherhood, of growth and opportunity, of responsible management, and of more effective use of resources--human and material. I have brought to your attention brief examples of efforts designed to provide environments and challenges to a segment of our population that must have a stake in setting the goals and in endeavoring to meet them. As we continue to examine the issues,it is well for us to keep in mind that talent, as a human resource, includes not only the academic, but also the creative, the kinesthetic, and the psychosocial potentials of man. It is also wise to remember that in our culture we continue to be concerned with the maximum fulfillment of the individual regardless of his or her ability.

Total talent development is both a means and an end to national goals. To achieve the latter,we must pursue the former.

Footnotes

1. NEA Reporter, July 15, 1966.

2. Matthew 25:14-30.

3. French, Joseph L., and Bartell N. Cardon, Employment Status and Characteristics of High School Dropouts of High Ability; University Park: The Pennsylvania State University, September 1966, p. 1.

4. Ibid. p. 79.

5. Ibid. p. 84.

6. Ackerman, Paul R., Demonstration of the Significance of a Consultant-Teacher for the Gifted to a Small Rural Secondary School. Final Report. Washington, D. C.: Cooperative Research Project Number S-088, U. S. Office of Education, 1966.

7. Goldberg, Miriam L., Harry A. Passow, David S. Camm, and Robert D. Neill, A Comparison of Mathematics Programs for Able Junior High School Students, Volume I - Final Report. New York: Talented Youth Project, Horace Mann-Lincoln Institute of School Experimentation, Teachers College, Columbia University, May 1966.

8. Ibid. p. 258.

9. Steinberg, Erwin R., et. al., A Senior High School Curriculum in English for Able College-Bound Students, Volume 5, Summary Report. Pittsburgh, Pa.: Curriculum Study Center in English, Carnegie Institute of Technology, 1966.

10. Ibid. p. 3.

11. Ibid. p. 1.

Talent Achievement in California

By

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I would like to begin my remarks today with a quotation from Alexis de Tocqueville - that adventurous Frenchman who came to America toward the end of the first third of the 19th century. No one, it seems, has better sensed and described the genius of American Democracy. Amazed at what he saw, and being what he was-- a searcher-- he sought to identify the reason for that genius. The touchstone he found was change. In his Democracy in America he wrote: "I accost an American sailor and inquire why the ships of his country are built so as to last but for a short time. He answers without hesitation that the art of navigation is every day making such rapid progress that the finest vessel would become almost useless if it lasted beyond a few years."

Somehow this comment, written in the 1830's seems unusually applicable to the situation we face today in our public education, and I'm certain that both de Tocqueville and his sailor would have been more than startled could they have foreseen in what ways the arts of navigation are used in these days of space exploration.

It seems to me that change is inherent in our society. In any arena of activity in America, one senses that our society insists on moving. It is true that some would move back, but move they would, and moving is a form of change. We here today seek to move forward. I wonder, while acknowledging all due justice to those who have labored, and labored well through the years in the great sea of education, if we may not tend to view our "ship" of education in terms of plant, curriculum, and people as having been designed to last too long. Our voyage of change is slowed by the head winds of past practices, timorous traditions, and inertia. Even the exciting changes, improvements, and innovations of the past years see us still ill-equipped to face what lies ahead.

There is no implication here that change requires that we now build shoddy and temporary school buildings--particularly in defiance of the Field Act-but I think it is fair to say that past practices of design and construction must be greatly changed; nor do I wish to say that each curriculum should be designed for daily change, though there might be something in that suggestion; nor finally do I wish to suggest that most of our teachers should be trained for quick obsolescence or disillusion, though I fear that such happens all too often in our current system. Design to accommodate change can give us the best of two worlds.

Do these remarks thus far imply derogation or pessimism? They are not meant to, for I know first of all what a miracle it has been for the schools of California just to keep up with the physical requirements of a post-war burgeoning population and still make progress in academic accomplishments. I am fully aware of the post-Sputnik developments in mathematics and science, and now thankfully in the humanities. I know that there have always been wise, sincere, hardworking, and innovative teachers, administrators, and school board members; and I take personal pride in what I believe our State Board of Education has accomplished in these past few years through strengthening credential requirements, insisting on and abetting curriculum reforms, in advocating provision of equal opportunities, and many other matters.

I say simply that as we move ahead to face ever-growing demands and problems that we consider seriously the approach attributed to the American shipbuilder by that unknown sailor of the past century, and that our concern be primarily with recognizing, expanding, and developing new arts of educational navigation.

But I am here to talk about "Talent Development in California" and here it seems to me we must develop our best navigators, build our swiftest ships, and staff them with the best of crews.

I pay just and well-deserved tribute to Francis W. Doyle, Chief of the Division of Special Schools and Services, and to Paul Plowman and Joe Rice who have worked so well and faithfully with the mentally gifted minor program, to all those concerned with the success of "Project Talent," to the Statewide Committee on Advanced Placement and its project coordinator Joe Palaia who works in an allied field in the State Board's effort to develop the Advanced Placement Program in California--this latter program goes beyond "measured" giftedness and is designed to reward as well as recognize talent.

It is good to realize that there are now 90,000 gifted students identified and in special programs in our schools, in spite of the barriers and problems which have hindered this progress. These barriers and problems are as familiar to you as they are to me: First, the lack of proper funding by the legislature; secondly, the problem of trained and qualified teachers; thirdly, the difficulty of providing proper programs in rural areas; fourthly, and to me perhaps most important, the rigid requirements of an archaic Education Code which by its mandation of required subjects at prescribed grade levels deters, discourages, or even prevents the provision of a proper program for talented youngsters, particularly in such areas as art and music. (This the State Board hopes to improve and correct by legislation in the next legislature.)

Talent development may go far beyond the mentally gifted minor program, which actually affects only 2% of our students. I like what Joe Rice said in his recent testimony before a subcommittee of the legislature:

"If (legislators) desire an emphasis upon total talent development as an overall state goal, then it follows logically that the mentally gifted minor program should represent only a beginning." He goes on to say, "General cultural excellence has been historically linked with those societies willing to invest heavily not only in their intellectuals, but also in their creative artists, master technicians, writers, musicians, and the whole range of human talent."

I personally couldn't agree more, so where do our navigators take us from here?

1. They should take us through the Great Barrier Reef marked "insufficient funds," and this applies to local school districts as well as to the legislature.

2. They should take us through the dangerous shoal, marked by the wrecks of many ships, called Division VII of the Education Code.

3. They should search for, find, and train truly gifted staff members who are stimulated by the thought of voyage, competent in their craftsmanship, prepared for frustration, but above all excited about the destination.

4. They should enlist as crew not only those of extreme intelligence, but also those who are perhaps somewhat less able but possessed of high ambition, those who have high potential in the creative arts, and finally those from any status, race, or creed whose latent abilities can be perceived and developed.

To me,talent identification in California cannot be bound by arbitrary percentage figures or I.Q. scores. It exists everywhere, in country or in city; in suburb or ghetto; among the rich and among the poor; and above all in areas which we have not tended to explore. Professor Paul Witty of Northwestern University, long an authority on excellence, has said that giftedness is characterized by "performance in a worthwhile line of human endeavor which is remarkable consistently." The range of the gamut he identifies are areas such as art, music, mechanics, creative writing, creative drama, and social leadership, as well as verbal intelligence. He further states categorically that by restricting ourselves to the verbal and mathematical norms we miss a full 70% to whom he would ascribe the word gifted. However, with our present funds we are not able to provide adequately even for these defined gifted.

Today with the new discoveries about the learning process, we are all in effect, "culturally disadvantaged," and the great challenge in talent development in California is for us to enlarge our views, and create an enlarged understanding about them.

I have always liked a remark made by one of Charlie Keller's John Hay Fellows, Evelyn Copeland, teacher of English in Connecticut. In a talk given on "What Are They Learning," she said, "Within each of us there is something waiting to be said."

As navigators let us chart our course in such a way that what is waiting to be said may be said. We may have to redesign our ship to do so-- *but do it we must* if we are to be true to de Tocqueville's image of us. Remember,he saw our genius as one of a people characterized by a willingness--even an eagerness to encompass change.

PROBLEMS AND RECOMMENDATIONS IN TALENT DEVELOPMENT

This statement of 10 problems and recommendations is a resume of papers on problems and recommendations which were submitted to a pre-conference session November 14 by leading educators throughout the United States.

Problem 1.

Ten years ago the major theme at most educational conferences was the education of scientists, engineers,and technicians. Concern for the gifted developed from this, and special programs were built to satisfy their needs. Today, education has turned its attention to the needs of the poor and the culturally disadvantaged. Education focuses on only one major segment of the student population at a time. This is not to say that the education of the gifted is any more or less important than the concern for the disadvantaged. What is most important is the development of a capability for planning that can take into account the needs of all special groups of learners.

Recommendation 1. We recommend that the conference devote attention to the problems of the development of a permanent inquiry system that can make 5, 10, and 15 year projections of talent needs on a continuing basis. Participants in the inquiry system may be drawn from business, industry, government, the arts,and sciences. Many departments from our educational institutions could also contribute members to the inquiry system. As a resource for the placement of talented students, it has been predicted that the educational system itself will considerably increase its employment of the academically talented in the near future. A flexibility should be encouraged in the education system, and a readiness to adapt to the perceived needs of outside agencies. The future's study inquiry system must be prepared to develop multiple communication channels with education in order to facilitate this needed flexibility.

If the inquiry system were planned as a year-round agency, with an adequate research staff and budget, it could coordinate both future studies and more traditional research studies in education. This would add considerable coherence to what now stands as a rather fragmentary research program.

Problem 2. Societal (Culturally Determined) Problems

a. General--related to the general environment in California (and U.S.) society

(1) Anti-intellectualism
(2) High value placed on conformity

(a) Political and economic theory
(b) Required for vocational success ("Organization man")

Problem 2. (Continued)

(3) Increasing regimentation--perhaps necessary, but not likely to inspire development of unusual talents

b. Special--related to sub-cultures of individuals

(1) Diversity of values--talented individuals may come from culture groups holding values different from those leading to development of talent in society as a whole

(2) Lack of aspiration--related to 1; but usually involves lack of hope and frequently lack of self-esteem

Recommendation 2. Changes in social values and attitudes can only come as a result of good leadership in the country, prolonged educational efforts, good public relations programs, and increasing difficulties resulting from underdevelopment, or maldevelopment, of talent. This is a bootstrap-lifting operation in many respects.

Problem 3. School-Centered Problems

a. Limitations of current assessment programs and instruments
b. Need for improved techniques and facilities for differentiating instruction for students talented in some respects and not others
c. Individualization of instruction to attain balance among factual knowledge, skills, and creativity
d. Excessive pupil-teacher ratios
e. Need for more professional and para-professional assistance for teachers
f. Need for new and more instructional aids and materials
g. Need for more money to enable these problems to be tackled
h. Need for social attitude toward support of education of talented to be changed

Recommendation 3. Increased financial support for education--some of it will enable better provisions to be made for developing talent.

While special projects may well help give insights necessary for planning programs for the development of talent and may help change some attitudes, excessive reliance on them will be harmful and may--by setting aside those with talent--promote anti-intellectualism and conformist pressures.

Talented and creative persons need to be recruited into teaching and encouraged to work with superior students of all types.

Problem 4.

Talented students are more intelligent and more capable than the majority of school personnel.

Problem 4. (Continued)

Recommendation 4. It is possible to provide the instructional device which provides audio and visual input to the student and permits him to be an active participant in the learning process. Such equipment can be programmed to teach any basic factual information. Such equipment can be provided in two basic forms, as individual self-contained units and as individual study stations connected to a centralized program distribution system. In the case of the self-contained units, the individual study carrel and by dialing or otherwise selecting a program, be given access to instructional material designed to meet his learning needs.

Problem 5.

The understanding of talented students by staff personnel is limited by inadequate information processing procedures.

a. The lack of timely and sufficient data tends to produce perceptions of the students that are static and fixed rather than perceptions of students as fluid and changing.
b. Poor interaction between staff personnel such as counselors and teachers interferes with sharing of information about the students and implementing coordinated plans. The students' interpersonal experiences tend to be isolated, fragmented, and discontinuous.
c. Talented students are often not recognized because of inadequate information procedures.

Students' sense of choice, responsibility, and freedom are limited by inadequate procedures for retrieving information relevant to career planning and educational decision-making.

Recommendation 5. Information processing procedures should be developed that result in the collection, storage, processing, updating, and displaying of information about students. The procedures should provide the capability of measuring student attitudinal and behavioral response on a day-to-day basis so that the emergence of talents can be identified. In addition, the procedures help personnel in the system to be increasingly sensitive to the dynamic changes that occur in students as they fluidly change. Work on the Instructional Management System at Systems Development Corporation is a step in this direction.

Information retrieval capabilities should be developed that provide students with easy access to the large amounts of information that are relevant to educational and career decision-making. The work on the design of a man-machine system for a vocational counseling at Systems Development Corporation is a step in this direction.

Problem 6.

Although many innovations in instructional methods are encouraging student learnings around the higher levels of cognitive functioning, much of the current educational scene continues to be teacher dominated. Student dependency upon teacher and textbook inhibits the creative processes and minimizes critical thinking. Thus, the talented are frequently asked to demonstrate "how much do you know?" as opposed to "how well do you think with the knowledge you have gathered?"

Recommendation 6. Possible Solutions: (a) Expanded inservice education for teachers around higher orders of thinking; (b) increased development of curricular materials which direct pupil thinking around speculation, estimation, divergence, and critical thinking; and (c) greater efforts by teacher-training institutions in preparing teachers for newer approaches to problem-centered curricula and methods.

Problem 7.

Many highly capable and talented students are over-scheduled and excessively programmed in and out of school to the extent that individuality is submissive to adult-directed performance. Such students are telling us that they have little or no time to think (about themselves, the nature of current conflicts, or just think).

Recommendation 7. Possible Solutions: (a) Schools (organization, administration, and teachers) must learn to invest greater confidence in pupil maturity and capability for self-direction through the scheduling of specific open periods per week; (b) greater emphasis should be placed upon small group interactions which promote Socratic approaches to learning; ideas, not people, should dominate these experiences; (c) pupils' attitudes toward school should be considered in formulating organizational policies in schools.

Problem 8.

Methods of identifying talented youth do not reveal talents in such areas as art, music, and science.

Recommendation 8. There is the need for unified and comprehensive programs of talent development which include development of cognitive, affective, and psycho-motor talent. Some methods needed to identify talented youngsters from homes within which English is not the language used. These students do not usually perform as well as those from homes in which English is the native language.

Another problem facing small school districts is the availability of personnel qualified to identify mentally gifted children. It is difficult to obtain full-time people to work within small districts.

Problem 9.

Many current programs do not include adequate techniques for evaluation.

Recommendation 9. Evaluation programs need to be based on the unique characteristics, needs, and achievements of the gifted.

Problem 10.

Present levels of reimbursement from states are not adequate to allow school districts to inaugurate quality programs.

Recommendation 10. Higher levels of state financial support are necessary.

PROJECT TALENT
2
SECTION
CALIFORNIA

Innovation and Change in Talent Development

Innovation in Talent Development

By

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Propelled by fiery jets, man travels the skyways close to the speed of sound. He scans data at incredible speed and reaches for stars and ocean depths with craft which bring to life the sketches of da Vinci and the fantasies of Jules Verne.

When we read of these achievements, we are inspired by human potential--the growth of intellectual power, the magnitude and significance of man's achievements. When, on the other hand, we observe pedestrian teaching, supervision, and school administration, we are appalled by the fact that some children--even potential Michelangelos, da Vincis, and Teslas--are currently in situations which foster discontent and perhaps the need for rebellion. A brief survey of some of the problems of teaching and of administering schools reveals areas in need of innovation.

What Is Wrong in Our Classrooms

In many classes we find insignificant concepts and facts are given "equal time" or even more attention than significant concepts and facts. Teachers rely solely upon "cookbook" or "expedient" rather than upon conceptual approaches in stating educational objectives, developing lesson plans, planning assignments, and evaluating progress. Pupil-teacher role relationships are stressed which often pit teacher and pupil as antagonists rather than as co-learners and seekers of new knowledge, relationships among facts, and skills of analysis and synthesis. In many schools little is accomplished in tailoring experiences to the needs of individuals and to typologies of children. Few attempts are made to develop truly comprehensive, integrated programs for developing human potential.

The Plight of the School Administrator

Like the teacher, the school administrator is threatened by growing areas of knowledge and mass communication which momentarily might bury him beneath a pile of data processing cards, advertisements, and headlines--leaving him unsure of what facts are trivial and what facts are important.

Then, too, the ever-present applications for projects and funds make additional demands upon time and energy. Responding in a push-pull, stimulus-response, Skinnerian manner, the administrator may feel himself more and more an automaton--pulled this way and that. Somehow he must break these shackles to his own creative self-expression and leadership. Somehow he must maintain the perspective and philosophical position which allow him to employ the art of administration.

Innovation in Talent Development

Innovation in talent development, then, may involve innovation in administrative as well as instructional organization, processes, and use of resources. A key factor may be employment of staff responsible for planning and bringing about desired change. They may be deployed toward "first use" and "discovery" of organizing ideas, teaching-learning strategies, materials, supportive technology, and structure of content.

The "Classification Schema of Processes Related to and Necessary for Change in Education" by Egon G. Guba (Director of the National Institute for the Study of Change in Education) and research findings and writings of Henry Brickell and Roland Pellegrin suggest the need for role specialization in educational change. Already we are seeing the formulation of criteria for "program designers," "field testers," and "diffusion specialists." Such persons are a source of new leadership in state departments of education, research and development laboratories, and "Projects to Advance Creativity in Education."

It is reasonable to expect these change agents to become engrossed in co-operative efforts in talent development. The task might be one of providing children with comprehensive programs which incorporate an optimum amount of enrichment, counseling, flexible progression, special classes, independent study, and tutoring within a given school year. The task might be one of developing higher-order intellectual skills, specific aspects of creative behavior, and artistic and aesthetic talent. Human-relationship talent and kinesthetic talent are not to be ignored. The task might be one of designing innovative means for evaluating talent development and of working toward full development of human beings.

If "we" aspire to the appelation, "innovator," we might seek to answer questions such as:

1. What models of human development might be furthered in a thoroughly supportive, flexible, individualized, accelerated, reflective, humane, guidance-oriented, and intellectual environment?

2. To what degrees and in what manner might educators develop awareness, sensitivity, flexibility, originality, and constructive discontent?

3. What experiences are needed to contribute to a definition of self, to motivation, to creativity, to intellectual competence, and to ability to respond intuitively or emphathetically to the needs and behavior of other human beings?

Within the foreseeable future, we may design and acquire integrated systems for developing human potentiality. Important aspects of such systems would be electronic equipment for retrieval, display, and manipulation of data; experimental films for extending awareness and for overcoming cultural deprivation and rural isolation; computer-assisted instruction and guidance programs; display systems that show teachers instantly which students understand and which do not understand instruction; simulations for involving children in performing roles in situations devoid of the overbearing presence of an adult teacher; flexible scheduling; learning stations at home and at other places away from school; closed circuit television and improved programs in educational television. Envisioned now is the possibility of having paid access via one's telephone to college and high school courses, skill development programs, technical information, facts helpful in selecting a career, and enriched leisure-time activities. The emphasis will be upon "turning people on"--upon making man more rational, more creative, and more humane. Basic to this will be an expansion of man's own consciousness and an understanding of himself.

State Innovation in Talent Development

Innovation in talent development may be aided through coordinated state leadership and support. Optimum use of human and material resources may be achieved through task-force approaches in solving some of the major administrative problems of education. The state might also assemble a consortium of human talent to produce the resource materials needed by children of varying degrees of intelligence, creativity, and culture. Inter-agency cooperation might also involve personnel in scanning educational research and practice, designing and testing model programs, demonstrating them,and assisting school districts in installing and institutionalizing innovations. Guidelines for inter-agency cooperation may be seen in the work of the "Cooperative Educational Research Laboratory, Inc.," serving Illinois, Indiana, Michigan, and Wisconsin.

ESEA Title V, Project No. 8-A of the 1966-67 school year is an "innovation exchange project." It is designed to: feature presentations to the State Board of Education and staff of the State Department of Education by representatives of "significant innovative educational operations." An example of this were presentations made last week by Dr. Charles Keller of the John Hay Foundation. Another aspect of this project is a "staff visitation program" which provides departmental staff and members of the State Board of Education with opportunities to visit centers of educational innovations.

The three visitation groups are: (1) curriculum oriented group--consisting of representatives of the Division of Instruction, Office of Compensatory Education, Division of Special Education, two members of the State Board of Education, and a staff member of the State Board of Education; (2) a school administration oriented group will consist of members of the Division of Public School Administration, the Division of Departmental Administration, and appropriate members of the State Board of Education; (3) a teacher education and teacher supply oriented group will consist of members of the Division of Higher Education and members of the State Board of Education.

On October 24 and 25, 1966, the curriculum oriented group visited Education Services, Inc. of Cambridge and Newton, Massachusetts. ESI is viewed as an exemplary curriculum-material-development consortium. It is not a granting institution, but it has been able to procure support for or to assist in the development of noteworthy projects including: (1) Elementary Science Study Units, for example, "Behavior of Meal Worms," "Gasses and Airs," "Growing Seeds," "Kitchen Physics," "Micro-gardening," "Bones," "Attribute Games and Problems," and "Batteries and Bulbs"; (2) the Social Studies Curriculum Program,which has developed a trial version of "Man: A Course of Study" and teacher training programs; (3) Mathematics Curriculum Study; (4) University Curriculum Projects including a "Cooperative Program to Improve the Undergraduate Preparation of Prospective Teachers;" (5) University research and development projects; and (6) Studio operations, including Elementary Science Study Film Program, PSSC Film Program, motion pictures to improve instruction in developmental biology, and Social Studies Film Program, including ethnographic filming of the Netsilik Eskimos, editing of films on the Bushmen of the Kalahari Desert, and films of the social behavior of baboons.*

Materials produced to date are a fecund source of ideas for talent development. Many are used appropriately in independent study. One member of the visitation team asked, "Why can't we develop our own ESI in California?" Indeed, we could with the talent available here in this room and with the foundations, institutions, corporations, and other groups cooperating in putting on this conference.

On October 26, two members of the visitation team spent four hours at Meadowbrook Junior High School in Newton, Massachusetts, a school featured in the September 26, 1966,issue of Newsweek in an article, "Teachers: Igniting the Individual Pupil." The purposes of Meadowbrook are to do just that. They are: (1) "To help each student learn how to take charge of the development of his own potential, and to understand that only he, in the long run, is responsible for his learning"; (2) "To help each student become personally involved in his learning, to be free to actively explore his own resources and those of the school and the larger environment"; (3) "To help each student develop enough confidence in himself and in others to be able to think imaginatively and explore openly ideas, values, and relationships"; (4) "To help each student find true satisfaction in learning and to understand that the subject matter skills acquired are not only useful in themselves, but are tools with which to meet situations and to solve problems."

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*ESI Quarterly - Summer/Spring, 1966

To accomplish these purposes, the school is organized into Alpha, Beta, Gamma, and Sigma units, with approximately 250 students of all ages, ability levels, and interests. Each unit is staffed with 11 house advisors (representing English, mathematics, social sciences, science, and foreign language) and a guidance counselor. A house is made up of 12 students and a teacher. Each teacher is responsible for two houses and meets with them four times a week. The house advisor is a guide, a resource, and a catalyst. He represents his students and their needs at unit team meetings.

One of the main features of Meadowbrook Junior High School is that it provides an operational setting in which the individual makes a personal commitment to and becomes involved in his own education. It is assumed that most meaningful learning takes place in such a setting where the student may choose among: units of work in literature, social science, and science; activities within a unit of work; electives; and "when, where, and with whom part of his school time is spent."

Unscheduled time each day is spent in: (1) resource centers in English, foreign language, mathematics, science, social science, art, music, home economics, industrial arts, and typing; (2) an audio-visual center where students have access to films, filmstrips, records, and tapes in most subjects; (3) the library with more than six thousand volumes used for pleasure reading as well as research; (4) a language laboratory; (5) science laboratories staffed with teachers and science technicians; and (6) lecture hall and auditorium where enrichment is pursued through lectures on specific topics of interest, presentations by experts of current affairs, and presentations by professional persons in the performing arts.

An essential aspect of this program is the Study Plan, which is an agreement between the student and the teacher to do a certain job to the best of his ability within a certain length of time. The emphasis is placed upon quality of work rather than upon completing a large number of study plans.

In late afternoon of October 26, a Boeing 727 touched down at O'Hare International Airport. A few minutes later two members of the visitation team were meeting in a conference room at the airport with representatives from the West Aurora (Illinois) Public Schools. These individuals have had successful experience in inservice education programs involving "self-assessment." Both administrators and teachers have been involved.

Self-assessment procedures provide teachers and administrators with a means for comparing their perceptions of what is ideal performance of particular teaching and administrative functions with their perceptions of how they are actually performing these functions, and with how their performance is perceived by others. Teachers see how they are perceived by slow, average, and bright students; administrators see how they are perceived by teachers and other personnel. Sensitivity training groups, video-taping of actual classes and administrative situations, and presentations of models of new content and teaching strategies are part of this program.

Another Illinois development is "Project Facilitation." "Project Facilitation--a seedbed for innovation in Aurora, Illinois," is a Title III, ESEA planning grant for creating an improved climate for innovation and for providing "built-in" implementation supports for innovation and planned change. Part of this project involves building "change-agent" functions into the structures of school systems so that they may adapt continually to changing environment.

Evanston Township High School was visited on Thursday, October 27. Here one finds four high schools being developed on the same campus--each to be operated, in the main, as a separate school, but allowing for some mixing of students and programs to give the opportunities of many regular courses, electives, and extra-curricular activities. Some of the innovations summarized in the 1966 Annual Report of Evanston Township High School are: (1) an "artist in residence" program; (2) rotating Art I students through four teachers,with individual specialties in different aspects of art; (3) PTA giving"real art" to the school instead of duplicating machines and record players; and (4) an opera "lyric sing" program involving 700 students learning chorus lyrics and music. Four professional singers come in to sing leading parts. This is a way of gaining appreciation without over-involvement in production.

Other innovations at Evanston Township High School are: (1) an educational TV center where students under skilled direction produce video tape programs for use in a number of classes; (2) independent study differentiated with respect to characteristics of different subject areas; (3) interest in "information access" systems and use of electronic equipment in the library for locating sources and compiling bibliographies; (4) demonstration center in the fine arts; (5) "careful identification of performance criteria and greater utilization of individualized study program"; and (6) Summer Far-Eastern Studies Institute and Summer Seminar on the Non-Western World.

Another new development, "Individually Prescribed Instruction," is currently being tested at the Oak Leaf School in Pittsburgh, Pennsylvania; at the Elk Grove School District in Illinois; and in Monterey, California. IPI may be a sophisticated extension of the apple box with graded study and assignment sheets used by teachers in development of arithmetic and reading skills. Teachers work in teams and take turns being diagnosticians and prescription experts. It would seem that in time much of this program could be performed by computer-assisted instruction.

Cooperative Education Research Laboratory, Inc.

One of the most exciting aspects of the visit to the Chicago area was a lunch and early afternoon meeting with "innovative personnel" who established and directed the "Cooperative Educational Research Laboratory, Inc." Here is an attempt to build a flexible innovative organization:

- --to develop role specializations in innovation
- --to bring together in a task-force approach a "critical mass of talent" to bear on problems of education and of educational change
- --to create educational programs and inservice programs that "turn people on"
- --to coordinate and dovetail the use of funds from private and public sources.

County Innovation and Talent Development

Innovation and Talent Development might also be furthered through multi-county programs conducted in cooperation with institutions of higher education and state departments of education. One of the three-county ESEA planning grants in California would seem to be an appropriate vehicle for "full development of human potential." Programs of this nature can involve innovative means for identifying talent, replicating or designing model programs, establishing demonstration centers, creating inservice education programs, and building banks of independent instructional materials.

Inservice education programs might possibly involve "self-assessment" and "T" group sensitivity programs for changing where necessary the perceptions and behaviors of teachers and administrators--a much neglected first step in programs of educational change. Inservice education programs might also train teachers to use taxonomic approaches in developing skills and knowledge, in applying different teaching strategies, and in the optimum use of modern technology.

The banks of independent instructional materials formed by the county or groups of counties might be used by children initially in the format of kits and other packaged programs. Later these materials might become part of a computer-assisted instructional program or might become available through other electronic information access systems.

Community Groups and Innovation in Talent Development

Certainly to be mentioned in a presentation on Innovation in Talent Development are efforts of community groups to sponsor such programs. The Pasadena Association for the Gifted, the Lyceum of Monterey Peninsula, and the Gifted Child Association of San Fernando Valley are groups which provide innovative programs in talent development.

Summary

In summary, we can see improved programs of talent development resulting from (1) an exchange of innovative ideas among states and school districts; (2) role specialization in educational innovation; (3) redefinition of teaching roles; (4) optimum use of supportive technology; (5) efforts to design independent-study curriculums; and (6) establishing administrative organizations which encourage rather than discourage new ideas.

Role specialization in innovation might be a matter for continuing study by research and development centers, state departments of education, offices of county superintendents of schools, and school districts. Innovative efforts in redefining teaching roles might in part be directed toward achieving greater emphasis upon human-being to human-being encounters rather than upon role relationships which often get in the way of learning.

Optimum use of supportive technology would involve: (1) keeping track of student progress; (2) providing information needed in learning, teaching, and guidance; (3) simulating and allowing pupils to manipulate simulated social and scientific conditions; (4) providing immediate student responses to the teacher and categorizing them by such taxonomies as "The Structure of the Intellect" by J. P. Guilford or the Bloom "Taxonomy of Educational Objectives"; and (5) instructing and counseling children and youth.

This afternoon we have looked at concerns which underlie the necessity for innovation and change, parameters of educational innovation, possibilities for innovation in talent development, and examples of innovations. Fundamental to these considerations is what happens to children, to teachers, and to school administrators. Our focus on talent development leads to optimum development of boys and girls, optimum development of professional educators, and to a constantly improving innovative society.

Issues and Problems of Talent Development

By

William McGowan, Executive Secretary
California Association of Secondary School Administrators

We have followed our sight to the moon and made our mark on its pitted surface. We have looked beyond the moon to the stars and have developed evidence to support a belief that our dreams of other worlds of intelligent beings will be proven true.

We have made our world-home more hospitable by the creation of all sorts of things, by improving on nature in myriad ways to secure man's well-being. We have constructed great systems of culture, and, in the face of death and war, we have wrought achievable hopes for life and peace. We have done and thought many things, and always, the limits of our progress have been set by our imagination, our capacity for dreaming.

I dream of a day when we will have an educational system that will allow quality to assert itself, permit ability to find its own level of expression, where talent will be rewarded with the opportunity to grow in self-awareness and self-expression, where we will be free of the mechanistic, fact-oriented, restrictive system that limits us at present to a preoccupation with rote-learning, parrot-rewards, and meager motivation. I think this dream is possible of fulfillment if we will remind ourselves of the real purpose of education and relate this purpose to what we project tomorrow to be. The real purpose of education is to provide an individual with information, tools, techniques that will help him survive in an environment that is, at best, demanding.

Most of the so-called "basic objectives" of education that form the philosophical base on which the current education system rests are anachronistic. Formulated in 1917 and amplified by the Educational Policies Commission in 1938, the "Seven Cardinal Principles" are inadequate to meet modern educational needs. Needs now encompass a greater field than existed fifty or thirty years ago --by reason of expanding understanding of the universe and ourselves as part of the universe, and because of new elements added to the living habit by expanding understanding and new knowledge. The traditional "fundamentals" may still be fundamentals, but we, in our time, must learn how to master the "essentials," or we will become number seventeen in Toynbee's list of "dead and buried" civilizations.

These essentials have to do with a progress of education away from a preoccupation with things toward emphasis on problem solving -- away from education for the purpose of accumulating facts toward education for mastery of the learning process.

In an age when change is rampant, to educate children to the process of learning so that they may see beyond the accumulation of factual knowledge to a rearrangement of information in new models for new purposes is the only preparation for survival.

Roger Revelle, in a paper presented to the U. S. House of Representatives Committee on Science and Astronautics, January 26, 1966, said this of the goals of education:

Modern Education Strives to Give:	Traditional Education Leads To:
Problem Solving Ability	Rote Learning
Belief in Experimentation and Empiricism	Acceptance of Authority
Love of Innovation	Love of Tradition
Creativity	Regimentation
Self-Confidence	Search for Security
Optimism	Fatalism
Ability to Continue Learning Throughout Life	Terminal Education
Bringing Out Individual Abilities	Uniformity of Training
Self-Discipline in Work	Imposed Discipline in Classrooms
Coordination Between Hand and Brain	Rejection of Handwork
Public Morality and Responsibility	Family or Group Morality and Responsibility
Management and Decision Making Ability	Avoidance of Decisions
Ingenuity and Inventiveness	Following of Routine or Accepted Ways of Doing Things

Ashok Mehta, Deputy Chairman of the Planning Commission of India, has described in a single eloquent sentence the nature of education today, with profound implications for the future: "In former times the teacher could provide his students with a map to guide them through life; now the best thing he can give them is a compass."

Charles R. DeCarlo, in a paper titled "Learning and Early Childhood" which appears as part of *Volume V* of the *Commission On The Year 2000* of the American Academy of Arts and Sciences, makes these speculations upon the nature of education as it might be practiced 25-50 years from now:

"Formal education and development will begin at approximately the 12th to 18th month. It will proceed in serial style to adult/career education in six stages:

1.	Readiness Development	12 mo.-3/4 year	Home-nursery
2.	Early Childhood Education	3/4 - 5/6	K, 1, 2
3.	Elementary Education	5/6 - 9/10	3, 4, 5
4.	Group Education	9/10 - 12/13	6, 7, 8
5.	Guided Development	13 - 16	Secondary
6.	Independent Development	16 - 20	College

"*Readiness Development*-- Soft light, colors, sound, rhythmic motions of the surface, change in temperature, will be parts of the process. Special training units for home or education center will be available, involving use of television-type instruments, recorders, "Link Trainer"-type devices. *Early Childhood Education*-- will involve continued development of motor coordination and skills --typing, printing, assembling of blocks and structures. Musical skill and appreciation will be developed. Reading development will be accomplished via use of electronic books programmed to interpolate a question-response interlude. Reasoning will be strengthened by exercises which will be built around special optical and electronic systems. Experiments will be used in which the notions of observations of space, time,and duration are involved, where hypothesis and prediction can be used to implement elementary, but consistent,scientific experimentation. Physical exercises and group discipline will be a vital part of the program, as will role playing, dramatics, exercises in speech and expressiveness.

"The program will be built around a maximum use of information processing techniques such as individual electronic books, learning stations, central retrieval systems."

There isn't time to project our thinking ahead to other age levels, but imagine what it will be like when we can provide pupils, particularly the talented, with individual stations linked to computers programmed to bring them the world's storehouse of knowledge in a problem-solving setting that will demand the most of their intellects while permitting them to work at their own speed according to their individual ability.

Education will become something more than answering intelligent questions intelligently. It will become is becoming the creation of situations in which intelligent questions are likely to be asked! One of the most important goals of new teaching techniques is to motivate learning through rewards growing out of the learning process itself-- the feeling of satisfaction in attaining and fulfilling one's own responsibility for one's own accomplishments-- the pleasure that comes from achieving one's own objectives-- the joy in new awareness of self, and through self, of others, as the personality grows stronger in "coping" with self-identified problems.

Some of the prime "essentials" for this age, and for the predictable future, are self-awareness, self-knowledge, sensitivity to the involvements of interpersonal relationships, a tolerance for change in both the personal and impersonal world, a commitment to the well-being of all mankind, and a questing spirit.

Electronic data processing and other new developments will help us come to grips with these essentials. EDP will make mastery of the "fundamentals" easier and more effective than has ever before been possible and will provide new means for facilitating mastery of the "essentials."

Students of the future will have an awesome abundance of knowledge immediately available to them for their use in solving problems, and they will know how to use it. They will be "process" programmed and will know how to establish a pattern for inquiry that will bring to their use all available information, permitting them to use this information in individual ways to create new knowledge. This process has already begun and is achieving startling results.

Dr. Rodger T. Dombrow, Beaver College, Glenside, Pa., in a paper presented to the Abington Conference on New Directions in Secondary Education, May, 1966, made some interesting observations. "As a result of just space research alone, more than thirty-two hundred new products have been developed . . . . In 1960 a total of thirteen billion dollars in research and development generated sixty million pages of technical reports requiring fifty-thousand journals in sixty languages for its publication . . . . Today, it is no longer a wild dream to envision within a few years electronic devices that will store all of the world's knowledge-- the content of the British Museum, France's Bibliotheque Nationale, our own Library of Congress, and indeed, all of the recorded facts of the Orient and Occident."

Eventually, there will be established great computerized information storage and retrieval systems serving regions of the world that will make all accumulated information instantly available to users. "Instantly" is the proper word. Computers now work so rapidly that their reaction time is computed in "nano" seconds, and the number of nano seconds in a second is comparable to the number of seconds in thirty-three years.

Techniques now under development will permit the transmission of 7,200 bits of information per second over present telephone lines, while another type of communications channel under development will be capable of transmitting 220 million bits per second. Under this system it will be possible to transmit the entire content of Webster's New Collegiate Dictionary in less than one second.

Electronic data processing will not only provide instant information, it will provide opportunity for the development of new simulation techniques, computer analysis of instruction, computerized record storage, computer applications of clerical functions, computerized logistics for all sorts of operations.

There is no time to explore these matters further. We have only tried to titillate your interest in certain concepts by way of rather meager illustrative material. We may or may not have been successful. So be it. Just this -- in closing . . . .

We're in a "break-away" period of history. We must break away from the narrow confines of traditional educational objectives. We must break away from such things as the Carnegie unit that stereotypes learning situations-- a neighborhood school concept that perpetuates social and educational inequities, an inadequate school program -- a preoccupation with school finance as the only solution to educational problems. We must break away from a mechanistic, bureaucratic organization of the school system so that we can institute an organic structure, viable, dynamic, innovative, responsive to the needs and demands of a rapidly changing world. We must break away from the "backward glance" orientation toward a philosophy of living that tries to prepare us to see around the next corner. We must break away from the worship of security and learn how to be comfortable with uncertainty.

There's a great day ahead, but we may miss it if we don't start looking for it!

Influencing Change in Education

By

Charles C. Halbower & Company
Arthur D. Little, Inc.

In our country, change has become a way of life. In many aspects of our national culture we have developed a "change ethos," which differentiates us from many other countries in the western world. We are proud of our progress in improving our standard of living and increasing our gross national product. We take pride in the number of new products and the new materials and styles which are continually being developed. We make a special point of our social mobility. We strive to extend the opportunities for our citizens to follow their interests and aspirations in achieving to the limit of their abilities. These accomplishments and opportunities are based upon the process of change.

However, when we think of change in education, we must talk about a different sort of a change process. Change in education is largely a reaction to stimuli from outside our educational system: To perceived threats implied in the accomplishments of other countries, for example--Sputnik; to change in other segments of our culture, such as in science and technology; to change in our international relations and in our national economy; to changes in our social system; and, also, to changes in our knowledge of human behavior.

Dr. Francis Ianni, as Director of the Division of Educational Research, USOE, early in 1965 cited several pressures for change in our educational system:

1. The new technology and the growing complexity of society which make knowledge, rather than manual labor, the source of productivity

2. The urgency of technological change which creates new occupations and makes old ones obsolete overnight, thereby demanding new skills, new professions, and new means of training

3. The explosion of knowledge, which threatens to make out of date if not obsolete much of what the schools and colleges now teach

4. Rapid population growth, which together with growing interest in education, requires an enormous increase in the number and size of schools and colleges

5. Recent advances in learning theory, which stress the importance of early childhood experiences and of individual differences, and the growing conviction that we have barely scratched the surface of man's ability to learn

6. The awesomeness of modern technology and the constancy of change, which produce a widespread sense of insecurity and depersonalization and lend a new urgency to man's search for meaning and identity

Over the last few years these pressures have precipitated some serious thinking, some new policies, and a good bit of research and development work in education supported by a new influx of funds. Some significant changes have resulted in curriculum reform program development, school administration, teaching technology, and in approaches to teacher education. It is now possible to point to a number of so-called "light-house" institutions which have developed and implemented significant improvements in one or more of these areas.

The situation in American education, now, is characterized by growing distance and differences between those institutions which are taking advantage of new and tested educational developments and those which remain committed to their traditional past practices. This increasing variance is of critical concern to a number of thoughtful educational policy-makers because it represents a violation of our ideal--yes, even our expressed goal--of equal opportunity for quality education for all our people.

A number of years ago, Gibbon wrote, "Corsica is much easier to deplore than to describe." The same is true regarding the cultural lag in education. A number of papers have been written and speeches made on the subject of this socially maladaptive lag in education from the time innovations are developed and proven to the time they are widely adopted in schools. This resistance of education and educators to the product of research and development is virtually unmatched in other fields. In medicine, for example, the average lag between tested innovations and their application is estimated at about two years, with occasional exceptions possibly reaching five years. In education, this dissemination process typically takes much longer--estimates ranging from fifteen to thirty years--sometimes as long as fifty years. (The public school system in my own town is regarded generally as a very good one--team teaching, non-graded classes, independent study, etc.--but we have no kindergarten.) Some investigators have made widely quoted estimates that the average school system is 25 years behind the best.

What are the stimuli and influences which are precipitating educational change in school systems and which contribute to this cultural lag in education?

1. Dr. Conant, following his thesis that the educational establishment has not been responsive to the new developments important to education, advocated a nationwide advisory committee of representatives from our fifty states to recommend regional and national educational policy. A Governors' Compact has been established along those lines.

2. Foundations have supported research and development in education in various ways:

   * The Ford Foundation Fund for the Advancement of Education is a prime example.

   * The National Science Foundation in its support of the PSSC curriculum, and other curriculum developments in science, is another example.

   * The Kettering Foundation's Institute for the Development of Educational Activities and its support of planning for the National Institute for the Study of Educational Change, is yet another.

3. The U. S. Office of Education together with the Congress have developed programs and supplied funds in unprecedented support of educational developments relating to:

   - Vocational education

   - Compensatory education

   - National Defense Education (science, mathematics, foreign languages--and recently to a variety of other subjects and services)

   - Libraries and instructional materials

   - Programs to improve the effectiveness of state departments of education

   - Cooperative research projects

   - Educational R and D Centers and R and D laboratories

   - Supplemental educational centers under Title III of the ESEA

4. State agencies (legislatures, state boards, and state departments) are taking increasingly active roles in prescribing, influencing, and in monitoring educational policies regarding:

    - Textbooks
    - Curriculum
    - Class size
    - District size and ethnic composition of districts
    - State aid and equalization
    - Minimum teachers salaries, etc.

5. Intermediate units and various local school districts have joined together in regional groups to develop and provide various services:

    - ETV and other audio-visual resources
    - Special education programs and services
    - Data processing
    - Collective purchasing
    - School building design and construction, etc.

In spite of all this increased flux of activity including research and development, financial support for programs and projects, mandates in the legislatures, prescriptions from state boards, cooperation among various agencies, etc., the basic problem still remains:

> "The rich get richer and the poor get poorer--relatively."

More specifically, districts well endowed with professional and material resources, and located in communities supportive to education, those districts which are able and willing to participate meaningfully in activities to improve their educational offerings, and--incidentally, which, because of such resources and expressed values and interests, tend to attract new staff with strong developmental interests and capabilities--these districts are generally the ones which derive the greatest value from available programs and projects bearing upon new educational developments and their effective implementation.

At the other end of the spectrum, districts affected least by these opportunities tend to be smaller (or in some notable cases at the other extreme, core cities in metropolitan areas); they are poorly endowed with professional leadership and material resources; they are located in communities with divided or little commitment to education; they are staffed with personnel who are overstressed and underpaid; and their staff are beset with the need to deal simultaneously with several conflicting objectives, thus orienting them toward the principal goals of mere survival or escape. It is fairly obvious what kind of treatments should be applied to school districts in the second category: district reorganization, improved financing, new leadership, more and better professional staff with sufficient time to work effectively on discovered problems, and intensive and broad-scale involvements and collaborations with leaders of various groups in the community. (It's very easy to write such a prescription, isn't it?) This gets us right down to the basic question, however: How do you actually bring about changes in educational systems?

I would like to try to synthesize several findings and established principles from educational psychology, learning theory, group dynamics and role theory, organizational theory, and action research dealing with the management of change and to suggest the need for a process which I believe has been neglected in our efforts to improve the rate at which tested educational developments are adopted in school systems.

Some interesting action research and analyses of case studies of the management of change in corporations was carried out recently by Dr. Larry Greiner of the Harvard Business School. He and his associates found several conditions which are generally present in those situations where significant change was constructively and effectively implemented:

1. Top management was aware of significant pressures, both external and internal, for improvement.

2. Management had difficulty in coping with such pressures using traditional methods and approaches.

3. A change agent was introduced (either a consultant, or a new chief executive with a charter to make improvements).

4. Entry of the change agent was at the top of the organization.

5. The initial act of the new change agent was to institute a thorough examination of past practices and current problems.

6. Both top management and their immediate subordinates had a direct and immediate role in the examination of past practices and in the analysis of current problems.

7. The new man engaged many levels of the organization in the diagnostic and fact-finding process.

8. The change agent provided or stimulated the development of new methods and ideas for dealing with problems.

9. New approaches, solutions, and decisions were tested and tried out on a sample of problems.

10. When tests were successful and results were credible, the use of the new approaches, solutions,and decisions was extended to broader applications,and the changes became internalized.

Some additional insights are available from Professor Whitney Young, who, several years ago with his associates at Northwestern University, put together an inter-disciplinary course combining three introductory courses in anthropology, psychology, and sociology. (Those of you who are intimately acquainted with sociologists, anthropologists,and we psychologists have some idea of the magnitude of this chore.) This effort got underway by means of a thorough-going seminar involving those who were to teach the course in discussions of likenesses and differences in concepts, principles, content, and methods of the three disciplines. Later evaluation of the course documented its success. In commenting on policy regarding the development of such an innovative program, Professor Young suggests that:

1. Such courses must grow out of the department concerned.

2. It takes time to build such a joint undertaking.

3. It seldom, if ever, is put into final form--there must be continuous analysis, discussion,and improvement.

4. No course can be better than those teaching it.

5. Morale can be maintained at a high level among those developing and teaching such a course if there is ample administrative support.

In reference to the latter point, William K. Ramstad found in his study of experiments in staff utilization in 233 junior colleges in the U. S., that the personal attitude of the chief administrative officer toward the experimental programs was the most significant single factor in the process of adoption, or non-adoption of such programs.

Research studies of laboratory techniques of training as developed and described by NTL (the National Training Laboratories--a division of NEA)

T-groups, as they are sometimes called, give us additional validated principles to consider. Dr. Paul Buchanan, in a paper presented to a symposium conducted in 1963 by the Council of Industrial Relations Counselors, Inc., describes the use of behavioral science principles in a successful application to the process of organizational development--helping members of organizational units become more inventive or creative in operating the organizations and carrying out the functions for which they are responsible. The "T" group style of organizational development is a problem solving process; it is undertaken on a collaborative basis by the members of an organization together with a behavioral science practitioner; it reflects the belief that even in organizations which are operating satisfactorily there is room for further improvement; and it is directed toward developing the capabilities of an organization in such a manner that it can attain and sustain an optimum level of performance in response to the demands made upon it.

While Buchanan's paper dealt primarily with the "T" group method applied to a "family" group or an intact organizational unit, other research on the effect of "T" group methods in sensitivity training or human relations training, shows that:

1. The training approach frequently has a profound effect upon an individual's awareness of himself, the role he plays, his purposes and functions, his impact upon others, and of the complexities of group processes and interpersonal relations.

2. As in other effective learning situations, the learning process is "emergent"; it stimulates considerable personal involvement, and it requires "unlocking" of some prior opinions; it provides feedback and interpretation, immediate reinforcement, and significant "ah ha!" experiences; and the process is extremely relevant personally.

3. Carry-over effects of such training "back at the ranch" are enhanced when two or more individuals from a given unit are exposed to the same sort of training experiences. The social reinforcement and group cohesiveness thus afforded is often important in extending or generalizing from the derived training benefits after returning to one's organizational unit.

Now let's take a quick look both at some of the schemes and formulations representing the process of educational change and some of the programs and agencies involved.

Kurt Lewin gave us one of the earliest theoretical formulations in his three-phase process: (1) unfreeze, (2) move, and (3) refreeze. For our purposes today I hope you will remember the first two and discard the third.

Everett Rogers, working in the field of rural sociology regarding changes in agricultural practices, postulated a model based on the five stages in the adoption process: awareness, interest, evaluation, trial, and adoption. Remember his fourth stage--trial. The emphasis in his model, by the way, was on the individual adopter.

Philo Farnsworth suggested a model for educational applications with the following sequential steps:

1. Recognize and articulate the need.
2. Propose a solution.
3. Create interest in the suggested solution.
4. Demonstrate usefulness.
5. Invite group and public interest.
6. Obtain official approval and financing, and remove legal restrictions.

James E. Allen, Jr., Commissioner of Education in New York, proposes four stages in the process of inventing and diffusing innovations in the improvement of instruction:

1. Basic research -- the prime responsibility of universities
2. Program development--responsibility of universities and state agencies
3. Field trials, evaluation, and modification--responsibility of state agencies and universities
4. General dissemination--responsibility of intermediate units and local school systems

Egon Guba and David Clark have developed a classification schema of processes related to and necessary for change in education:

1. Research
2. Development
    a. Invention
    b. Design

3. Diffusion
    a. Dissemination
    b. Demonstration
4. Adoption
    a. Trial
    b. Installation
    c. Institutionalization

California State Superintendent Max Rafferty and Don Johnson of the State Department of Education have suggested the following sequential steps in the process to provide plans for instructional development:

1. Define the major problems requiring action.
2. Select for action those problems judged to be of highest priority.
3. For each problem selected, design an improved instructional approach, based on applicable research.
4. Evaluate the effectiveness of the new approach through field testing.
5. Disseminate the new approach--by informing school personnel--by demonstrating it in action.
6. Adopt the new approach, making such adaptations as appear necessary.

Now--if we analyze the current processes of educational change and diagnose the critical problems and pitfalls, we find that the most significant problem is in getting the bulk of the professional staff in a school system (teachers, administrators, and various specialized staff personnel) to take the plunge--to adopt and implement effectively the new educational developments they've read about, heard talked about, and may even have seen in a demonstration or a visitation.

Commissioner Allen notes the following:

> "After development and evaluation, the massive, heavy work of moving the improvement into the schools remains to be done. The actual diffusion of proven new programs throughout a state

> is a complex, time consuming, and expensive process, the dynamics of which are only partly understood. We *do know* that schools cannot be changed by mere exhortation, by being shown a better way in use elsewhere, or even by being ordered to comply."

What is missing here in this diffusion and adoption process? I maintain that we need to apply to the professional staff of a school system the same sort of principles derived from learning theory that you educators have found so effective in classroom teaching and that social psychologists have discovered in applied group dynamics, namely:

1. Emphasis on the method of *inquiry*, especially in group diagnoses of areas needing improvement
2. Learning by discovery
3. Emphasis on individualizing the educational process (taking into account individual differences and their implications) and personalizing the process (making the content and application personally relevant)
4. Active participation in the learning process, rather than passive engagement
5. Provision for immediate reinforcement and group support
6. Emphasis on shared responsibilities and need for collaborative efforts toward improvement in a school system

The point in the diffusion process at which such significantly different and increased effort needs to be applied is at the point where the professional staff *evaluates* the feasibility of a new educational development for their system, *tries it out*, and *decides* whether or not to make the effort to implement it--this is the point of *commitment*.

Speaking in relative terms, the steps in the diffusion of educational innovation prior to trial and adoption are rather well managed and carried out today. Much more research is being done today than previously. ERIC Centers (Educational Research Information Centers) are being established. Universities and teacher training institutions are involved in research and in collecting and evaluating research results. Educational R and D Centers and R and D laboratories are in operation, setting up and trying out experimental programs and projects based on interesting research results. Supplemental education centers (Title III - ESEA) and projects such as this one for demonstration and dissemination of promising educational developments are well under way. Evaluation of reports of various other programs and projects being carried out under other ESEA titles (I, II, and V) are being written up, digested, and distributed. In

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addition, a number of the more innovative schools and school systems--the so-called "light-house" schools--have adopted and implemented a number of new educational developments. Professional journals of various associations and brochures of commercial enterprises selling new materials and technologies are replete with accounts of new departures and their results. State departments of education and the intermediate units are taking cognizance of such new developments and are spreading the word about what schools have been involved in various projects and have adopted which approaches, and who has developed significant expertise and experience with which new approaches.

Relatively speaking, the woods are full of information--data for use by a school system's professional staff in appraising which program, curriculum, services, or instructional approach is apt to be most appropriate for their needs.

Now--at this point--what usually happens? The school elects to have a seminar or a workshop--maybe for two or three whole days--inviting one or several experts to come in for a "show and tell" session. Or, even more likely, the school system will send one or two of its key (supervisory or specialist) staff to a workshop or a seminar or a conference, such as this one, to gather and bring back more information and ideas. Occasionally, the school system will set up a visitation team of key personnel to visit experimental classes in a R and D laboratory or in a few "light-house" schools. I am sure you already see what I am getting at.

These efforts, while well intended, either amount to token efforts, or they involve the wrong set of staff in the wrong processes--and they certainly don't usually result in serious commitment of the bulk of the professional staff toward adoption and implementation.

What I am suggesting is the use of a combination of a sort of a training institute--many of the NDEA and NSF institutes are demonstrated successes--together with a group process approach--and provide an opportunity for groups of potentially affected professional staff to spend three or four weeks in a "light-house" system or in an experimental class, and really learn through personal, participative experience in depth what the new development is all about. This experience would involve some basic orientation regarding the genesis of the innovation, a review of relevant literature, analyses, discussions and critiques of on-going classroom practices, and of the role and function of the teacher in the classroom, actual practice in developing materials and exhibits for classroom presentation, planning for the use of audio-visual aids, participation in the actual classroom instruction, and an evaluation of his or her experience with the new development *in situs* and *in vita*.

Further, and I believe this is quite important, the staff to be involved in such experiences should not be limited to school system supervisors, specialists, department heads, or the innovative "wave-makers." Too often it is the "wave-makers," the innovators, who are sent on visitations to demonstrations because of their obvious interest, dedication, and even established commitment. The critical group, where commitment is most valuable and even required for successful implementation, is in the "center of gravity" staff. These are the staff whose opinions and behavior carry considerable weight with their colleagues. These are individuals who are apt to take on the "defender role," (defending against any non-essential change) as described by my neighbor, Dr. Donald Klein of Boston University. He believes that, "depending on the nature of the social system and the issues involved, defenders may represent varying sub-groups and serve the system in several ways:

1. They constitute the spokesmen for some inner core of tradition and values;

2. They are the ones most likely to perceive real threats to the well-being of the system; and

3. They are sensitive to any indication that those seeking to produce change lack sympathetic understanding of the core goals and values of the system."

And, incidentally, their tenure is usually such that they have seen innovators come and go. They have some appreciation of the fact, reported by Medill Bair, Superintendent of Carmel Unified School District, that the average tenure of a "change agent" superintendent is about six years--while that of the "agent of resistance" superintendent is fourteen years.

It is most important that such representatives of stability and targets of change be involved as participants in the process of assessment, goal setting, evaluation of alternatives, try-outs, and design of action.

I believe that the process I have outlined here is important. It would appear to meet a need which has not yet been satisfied. It applies to a number of well established principles of learning and group dynamics. It involves an important segment of a school system which, heretofore, has been largely neglected in efforts to adopt and implement new educational developments and innovations. It sets up a legitimate role to be carried out by potential "defenders" in evaluating the usefulness and feasibility of an educational development which is considered for adoption in a school system. It provides an opportunity to mobilize in an effective way, cohesive group support for the decision to adopt a certain kind of educational development, and to develop commitment to the modification and tune-up necessary to implement and adapt the educational development to the unique requirements of a given school system.

As Commissioner Allen has warned, such a process would be expensive. It requires significant chunks of released time of several professional staff. This might result in the need for a number of substitute teachers or for the consideration of faculty exchanges with the experimental school or the "light-house" school. It would require considerable administrative support, planning and preparation, and additional staff. Educational engineers and group process leaders from the behavioral sciences would be needed at the experimental labs or the light-house school in order to assist the visiting teachers to make optimum use of their exposure and experiences. Just as Philo Farnsworth suggested, professional in-group support and public interest would need to be stimulated, official approval and financing obtained, and legal restrictions removed.

This would certainly be a tall order,but as we heard this morning, big goals are better than small goals; however, it appears that a new approach involving several orders of magnitude of increased effort will be necessary if we are to shorten significantly the time required for broad-scale adoption and implementation of tested educational developments to reduce the growing difference among school systems in the quality of their programs and in the educational opportunities afforded to members of their communities.

PROJECT TALENT
3
SECTION
CALIFORNIA

California Project Talent

Current State Organization for Talent Development

By

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Over fifty years ago, a Chicago architect and embryo industrial designer, named Sullivan, coined the phrase "form follows function." While Mr. Sullivan was speaking of inanimate objects, his observation likewise is applicable to administrative structures, and with this in mind, I would like to report briefly on California's formal organizational structure for directing talent development and then offer a few comments on this structure as well as suggestions for future developments.

In the California State Department of Education, specific responsibility for programs for mentally gifted minors has been placed in the Bureau for Educationally Handicapped and Mentally Exceptional Children within the Division of Special Schools and Services. From the time the enabling legislation was enacted in 1961 until mid 1964, this responsibility rested within the Bureau of Elementary Education and the Bureau of Secondary Education of the Division of Instruction.

Two consultants are presently assigned full time duties for the program, covering all 58 counties and 1200-plus school districts from the Sacramento office of the State Department of Education.

All the answers to the question of why the program was moved to the Division of Special Schools and Services are perhaps best answered by others who were involved in the decision making at the time, but the generalization can be made that the program's new home offered the possibility of improved efficiency and effectiveness, and this brings me to my observations:

EXTERNAL

1. The intent of a state-wide program such as this should be spelled out clearly, either by the legislature, the state educational agency, or both. California's own legislation, passed in 1961, was influenced substantially by the results of a legislative study during the preceding few years which placed major emphasis upon academic ability. As you have noted, I have talked about our program for mentally gifted minors because this is the terminology under which additional funds are provided to local school districts.

2. Any program intent, regardless of how stated, should provide for flexibility and change. Again, in California's case, the years since our original study and legislation have seen great strides in our concern for assisting pupils who indicate talent in a

broad sense rather than that of academics alone. The very title and nature of this conference offer concrete evidence of this; yet, it is not explicit in our original legislative framework. We do, however, believe we are reflecting national trends, and our contacts with the California Legislature and with the State Board of Education suggest support for the direction we are taking. My own feeling is that state legislation should be broad enough to encourage and facilitate growth, not inhibit it.

3. Program development is facilitated by the contributions of a broadly-based advisory group. Such a group is valuable in assisting in legislative changes, in curricular development, in giving guidance to state agencies, and similar activities. California does not now have such a group, and I believe its establishment would be valuable in bringing together representatives from local school districts, teacher training institutions, professional organizations, the State Department of Education, the State Board of Education, and the Legislature in continuing attention to state-wide talent development. Some of you from less populous states may feel a formal structure is not needed, but I believe all states can benefit from a formal structure for long-range planning, and when you find yourself with growth problems similar to those of California, I think you will find it essential.

Let me turn now to a few observations on the internal organization for talent development of a state agency:

INTERNAL

1. Primary responsibility for programs for talent development should be identified clearly. The word "visibility" is sometimes used and probably it has application here, but I am thinking of more than paper visibility--real visibility in terms of an office which the field and the state agency can turn to for guidance and answers to questions, an office able to develop new ideas and projects, and an office with sufficient authority (along with its responsibility) to work with a broad spectrum of groups and agencies outside its host educational agency.

2. A major function of talent development programs at the state level is curriculum development. Here I am not referring to simply the "What," but also the "How," the "Why," and the "When," drawing upon the psychology of learning, child growth and development data, media and instructional techniques, administrative organizational patterns--all factors which impinge upon the total plan. The contributions to the total school program from this function are enormous and go far beyond those selected pupils who may be identified as talented or gifted, much as the contributions from programs for the educable mentally retarded and the neurologically handicapped are making an impact upon the structure and methodology of programs for all pupils. However,

this potential cannot be realized unless the appropriate office is authorized and encouraged, internally and externally, to assume a leadership role in this area.

3. State leadership requires adequate staff. California is currently providing special assistance to more than 400,000 pupils--more than some of you have in your entire state population. These programs have grown extremely rapidly, something many of you have so far escaped; yet, if our demographers are correct, California will be providing service to approximately 1,000,000 such pupils by 1980--and I don't believe we will be able to continue to maintain quality by simply increasing our present state staff from sixteen to thirty-five. We will have to develop new ways of working, including cooperation with intermediate units (and obtain legislation which will allow them to establish stronger and more effective structures). And, of course, new ways of working require new ways of thinking.

   What I would like to suggest is that adequate staff means more than simply an identifiable person or persons, and includes sufficient professional and secretarial staff plus time to work with local districts, with intermediate units, with colleges and universities, with innovative and exemplary programs, and very importantly, to plan the requirements of 1980 and how to get there.

4. Adequately performed functions require supportive services. This refers to the age-old expression, "the tools to do the job," with particular reference to funds, data collection service, general administrative support, and the like--an area all too often neglected or ignored, yet one which has great impact upon efficiency and effectiveness.

5. With all due credit to Gaylord Parkinson, coordination must be planned to be effective. A program narrowly conceived for a tiny segment of the intellectually able might be able to function reasonably successfully as an isolated self-contained unit. But when programs become as complex and as significant as those for the talented with whom we are concerned here, then it becomes apparent that no available resource should be neglected, and within a state educational agency this ranges from attendance regulations to equipment selection, to state-wide curriculum developments, and to opportunities provided for in current federal legislation. Earlier I mentioned that in California primary responsibility for programs for mentally gifted minors (a legal term) is vested in the Bureau for Educationally Handicapped and Mentally Exceptional Children, which I believe offers more advantages than disadvantages for us. But regardless of where your state may place such responsibility, I hope the program is considered a genuine program of the total state agency, not just one or two offices, and in order to utilize the total state agency's resources, I suggest an inter-department or

inter-agency representative committee or council on talent development be established on a permanent basis.

I have not mentioned the many specific types of activities which contribute to functional performance at the state level, such as workshops, demonstration programs, research, et cetera, because such activities can be subsumed easily within the previous observations and comments, and in addition will vary according to a given program, resources, and developmental progress. If you do have specific questions, our staff members who are present at this conference will be pleased to try to give you answers and suggestions.

California Project Talent: A Unique Educational Development

By

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The phrase "California Project Talent" was adopted as a title for a Cooperative Research Project entitled "Demonstration of Differential Programming in Enrichment, Acceleration, Counseling, and Special Classes for Gifted Pupils in Grades 1-9" (a project commencing April 15, 1963, and terminating December 31, 1966, Project No. D-072, Contract No. OE-10-109, funded for $249,603 on April 18, 1963.) This project was based upon earlier research and demonstration of programs for gifted pupils in California. California Project Talent should be viewed as the demonstrational aspect of the Mentally Gifted Minor programs in California.

The fundamental purpose of this project was to plan, develop, demonstrate, disseminate, and promote differential plans for the education of gifted children and youth. Four specific educational program prototypes including (1) acceleration through use of the summer school; (2) enrichment in the fine arts, science, and the language arts; (3) a cooperative counseling and instructional program; and (4) full-time classes organized for gifted pupils were planned, developed, demonstrated, and disseminated. Special curriculum materials, evaluation procedures, workshop and inservice training techniques, and special teacher aids were invented developed, utilized in school district settings, and produced for widespread distribution.

Evaluation of action research programs ought to be simple and practical. California Project Talent as coordinated with the California Mentally Gifted Minor Program promoted the following practical results: (1) pupil enrollment in mentally gifted minor programs expanded from approximately 38,000 in 1962 to approximately 90,000 in 1966; (2) as the result of visitation to Project Talent Demonstration Centers, the program prototypes developed have influenced the educational programs in well over half of the districts in California offering mentally gifted minor programs and in a number of school districts in other states: (3) all of the school districts in California have developed and submitted to the State Department of Education acceptable "written plans" describing their mentally gifted minor programs, the vast majority of these written plans demonstrating clear evidence of the incorporation of theoretical models for curriculum development advocated by the Demonstration Centers; and (4) teacher, student, parent, and administrative evaluations of the four program prototypes and the summer workshops have resulted in unequivocal commendations for the goals and accomplishments of these programs.

Background and Philosophy:

The pioneering works of Terman, Guilford, and MacKinnon, among many research workers based in California, are well known throughout the nation. Their collective works formed a logical basis for a California State Study commencing in 1956 which thoroughly: (1) assessed the educational needs of gifted children in California, (2) studied operational programs for gifted students then in existence in California school districts, and (3) determined the costs incurred by school districts offering special programs for mentally gifted minors.

The "California State Study," under the direction of Dr. Ruth Martinson, reported in 1961: "All phases of the evaluation made of programs for gifted pupils included in the state study showed conclusively that special provisions made in these programs were beneficial." Program cost data furnished by the participating districts indicated that the cost of identifying a gifted student amounted to approximately $40. Program costs varied considerably, depending upon the type of program offered. Enrichment-type programs in the regular classroom could be conducted, the figures indicated, with extra funds of $90 to $150 per pupil per year. More expensive types of programs, including special classes and counseling programs, cost up to $270 per pupil. These cost data became the basis for initial legislation passed on June 28, 1961. School districts could be reimbursed $40 per pupil per year for excess costs incurred in offering special educational programs for mentally gifted minors. It was thought that this initial legislation would encourage widespread identification of mentally gifted minors. It was further assumed that subsequent legislation would passed within the next year to augment the excess costs of school districts for implementing the educational program; it was thought that the Legislature would pass a level of financial support up to $240 as recommended in the State Study. However, the existing mentally gifted minor legislation still reimburses school districts only up to $40 per pupil per year.

Steady and spectacular growth in the enrollment of mentally gifted minors has been witnessed since 1961. Growing from a mentally gifted minor enrollment of 38,721 pupils in 188 school districts in fiscal year 1961-62, the current enrollment is approximately 90,000 in approximately 300 of the larger school districts in California. Projected enrollment estimates exceed 100,000 pupils by the next fiscal year.

Although recommendations for demonstration centers for the development, promotion, and export of educational programs were advocated at the state level, no special legislation was passed. Therefore, the California State Department of Education applied for and was awarded the Cooperative Research Grant called "California Project Talent."

Six program prototypes are currently being implemented in California schools. These include: (1) enrichment programs in regular classes, (2) courses arranged by mail or special tutoring, (3) advanced classes including acceleration programs, (4) cooperative high school-college programs in which high school students attend college classes, (5) special counseling or instruction outside of regular classes, and (6) special classes organized for gifted pupils. The four program prototypes selected for demonstration within the Project Talent Proposal were: (1) enrichment, (2) acceleration, (3) group counseling-instructional programs, and (4) special classes.

Preliminary curriculum models and proposed demonstration districts were chosen prior to the submission of the research proposal. The enrichment and counseling programs were established in the Los Angeles Unified School District and the San Juan Unified School District, respectively. Districts chosen partly on the basis of geographical representation to develop and demonstrate the acceleration summer-school program were the Pasadena Unified School District and the Ravenswood Elementary School District. Demonstrations of special classes organized for gifted pupils in grades 4-5 were developed in the Lompoc Unified School District and in the Davis Unified School District. Overall coordination of the six demonstrational programs in the field was managed by California State Department of Education staff based in Sacramento. Education Research Consultants were assigned special field positions at demonstration centers. The demonstration districts organized, implemented, and staffed the mentally gifted minor programs with state and local funds. In general, the federal monies were used to acquire state level professional personnel, conduct planning and developmental studies, evaluate programs, and produce educational products such as films, filmstrips, and instructional guides.

Our educational philosophy is briefly summarized as follows:

1. We recognize that children are vastly different in academic potential. Therefore, we have attempted to achieve differential and individualized pupil programming. Contradictory societal values, which alternately prize unity and diversity, complicated our task. Thus, while aiming for completely individualized academic programs, we compromised and utilized institutionalized differential programming. By deliberately developing program prototypes appropriate for school districts with different philosophical points of view, it was possible to offer almost any school district an acceptable program prototype for consideration and possible adoption. Furthermore, we advocated multiple program prototypes within the same school district.

2. In all program prototypes, we attempted to promote the notion of individual placement by maturational level. The curriculum must be appropriate to the level of intellectual functioning of the child as well as to his social cognizance of issues and problems. Physical placement of the child at a higher level of operation is possible in the acceleration and special classes program prototypes. However, even within the enrichment and counseling programs, the concept of individual placement becomes operational when teachers and counselors individually adjust, rearrange, and substitute more appropriate levels of curriculum for routine, unnecessary, and duplicative units of study.

3. Inventive attempts were made to link all of the program prototypes with modern theories of learning and curriculum construction. Basically, this task involved correlating curriculum content with appropriate intellectual operations and products. Our focus has been upon the human organism and its unique choices and pathways for response. Such practical outcomes were emphasized as: the capability for analyzing and solving problems, self-understanding, thinking strategies, and concept formation. Mere knowledge gathering, storing, and connecting were viewed as secondary goals.

4. An important aspect of program development included the gathering of accurate and meaningful case-study data on every pupil. The primary goal of the case study was to provide information for the sequential placement of students into an array of program possibilities. It provided a data base which enabled the teacher, pupil, and parent to share in making decisions. The emphasis upon placement on the basis of meaningful case study of pupils resulted in considerable curriculum modification and advanced program planning.

Program Development and Dissemination:

An action research project "evolves" as opposed to being "developed" in rigidly prescribed ways. While the traditional stages of planning, expediting, revising, and evaluating aspects of the program occur, these stages do not follow prescribed nor orderly sequences. It was anticipated at the initiation of this project that curriculum planning and development program demonstration and dissemination followed by export and evaluation of program prototypes would occur in reasonably systematic order. However, this orderliness did not occur. Curriculum development occurred during the entire progress of the project. Limited kinds of evaluation of curriculum content, student behavior, and teacher reactions were necessary in the first months of operation.

Description of this project seems possible in terms of three categories of phenomena including: (1) initial project strategy and logistics, (2) definition of roles and services, and (3) resulting products, programs, and guidelines.

Project strategy made use of existing mentally gifted minor programs in the state. Some programs were embellished and reinforced with infusions of modern learning theories and professional services. State level consultants were assigned to the demonstration districts to refine descriptions of these programs; develop local products needed by teachers and pupils for the implementation of programs; conduct workshops, inservice training institutes, and other services; and disseminate and export the program models to other school districts. Logistically, the entire operation was co-directed from Sacramento through the agency of the California State Department of Education.

In order to carry out developmental phases of this project, traditional roles of state and local level consultants and teachers needed to be reassessed and, where necessary, redefined. For example, an "action research consultant" in the field functions in ways foreign to a more traditional state-level assignment. This consultant needs to be a sort of "jack of all trades." At the same time, this consultant must be "master of all these trades." In short, the lifeblood of an action research project of this sort is the professional staff selected to work in the field on program development, dissemination, and evaluation. We must be able to find in the same person proficiency in writing, knowledgeability and comfort with group techniques, and sophisticated knowledge of the application of advanced research techniques and conceptual designs.

Products forthcoming from an action research endeavor are dependent, of course, upon a number of unforeseen as well as upon controlled variables. Obviously, some programs were in a more advanced state of operation at the commencement of this project. Therefore, it was possible to refine existing materials and export them quickly. We required as a minimal standard the development of refined curriculum guidelines for each of the enrichment, acceleration, counseling-instructional,and special class program prototypes. These handbooks are in final stages of preparation and should be distributed in 1967. A second order of priority was the concentration upon teacher training, institute, and workshop guidelines. A series of 14 films on enrichment, the descriptions of summer workshops held in conjunction with state colleges, and other documents attest to success in this area.

In addition, administrative, school psychological, and evaluative guidelines were developed and disseminated. Although individual teachers and cooperating project personnel did develop classroom pupil materials, this type of product was not an outstanding contribution of this project. Hence, we had to rely upon existing pupil materials such as SRA Study Kits, Great Books Series, or the materials developed by the Community Resources Project of the San Diego County Superintendent of Schools Office.

Each of the four Project Talent program prototypes will be thoroughly reported in the next articles. However, we might briefly review each of these programs in terms of their special features and accompanying problems:

The enrichment program proved to be a sort of universal program for the trying out of theoretical models. Three qualitatively different enrichment programs were developed in the fine arts ("critical appreciation"), understanding of literature through writing ("creative expression"), and scientific investigation and methodology ("through an emphasis upon statistics and scientific inquiry"). Analysis revealed that enrichment programs involve as many problems as do other program prototypes. For instance, grouping, clustering, or segregating pupils became an inevitable necessity.

Our special classes, designed for grades 4-5, proved to be a sort of "ideal laboratory setting" for trying out and evaluating higher-level curriculum content. New curriculums were initiated in science, mathematics, and social science. Changes in the mathematics program included incorporation of higher level materials from the School Mathematics Study Group Materials, Madison Project Materials, and units of study in mathematical logic (Suppes-Stanford University). New science curriculum stressed the methods of inquiry and techniques for gathering data and stating and testing hypotheses. Social science materials adopted content from anthropology, sociology, political science, and psychology as well as from the more traditional social-science disciplines. Problems encountered by special-class teachers tended to be social and political rather than academic or scholarly. Teacher bias seemed to be as high as parent or student bias against the segregation of gifted students.

The acceleration program succeeded not so much because of any new curriculum introduced, but rather because of the psychological security promoted in a child who perceives that he is "not skipping" any unity of work. An informative research study was conducted by the Pasadena Schools in which three groups of accelerated second-grade students were studied to ascertain their adjustment to fourth and fifth grades. It was found that the students attending the summer school made significantly greater achievement gains as well as demonstrating more psychological and social "toughness" than did pupils who were "skipped."

The greatest problem encountered by acceleration programs appeared to be historical. Many parents had been accelerated in the 1920s and 1930s for arbitrary or financial reasons. These programs had no counseling or followup tutoring. Thus, many parents and teachers possessed emotionally laden biases against acceleration type of programs.

The counseling-instructional program attempted to involve teaching and guidance staffs in similar missions. The program appeared to succeed well in the demonstration center. However, export of this program has been disappointing. Possibly at the root of this disappointment is the well-known, but little talked about, interprofessional dissension between professional counselors and teachers.

In our operational program, group counseling sessions for pupils in grades 7-9 involved discussion of topics which were related to the English and social science curriculums. On alternate weeks guidance-related activities took place within a teacher-led seminar session. Two educational outcomes of this program included: (1) growth in pupil personality and understanding of the relatedness of social and literary issues to one's self, and (2) more dialogue with resultant curriculum modification and change in roles performed by counselors and teachers. The demonstration district reported new and more effective counselor-teacher relationships evolved from this program prototype, which wove together the goals and processes of counseling and instruction.

Outcomes and Unsolved Problems:

The tangible outcomes of this project are manifest in films, guidelines, pupil materials, and handbooks produced and disseminated. In the relatively short period of three years, the four program prototypes of enrichment, acceleration, counseling, and special classes were produced, demonstrated, refined, evaluated, and exported to foreign school districts and regions. Also, summer workshops were planned, conducted, and evaluated by project staff members. Mentally gifted pupils attended classes simultaneously with teacher participation in the summer workshops.

These workshops amalgamated pupil observation and program planning with teacher training and evaluation.

Perhaps the most important outcome of this project, in the long term, will be the demonstration of the feasibility of applying theoretical models, such as Bloom's Taxonomy or Guilford's Structure of Intellect Model, to the actual construction of curriculum content.

Briefly, the following general outcomes were accomplished:

1. Greatly increased diversity in programs for the gifted in California can be demonstrated. Although there were many requests for Project material, the influence on out-of-state and regional programs has not yet been established.

2. Increased commitment on the part of lay groups, boards of education as well as professional personnel to gifted child programs in and out of the state is obvious from correspondence, and the growth of programs and pupil participation. Also, it can be shown that newly developed programs relate guidance, counseling, and instructional dimensions into their program frameworks.

3. As witnessed by the quality of district "written plans" for gifted child programs, it is readily apparent that the sophistication level of teachers, consultants, and school administrators with respect to characteristics and needs of gifted children has been advanced considerably.

4. Continuation of the demonstration center programs will be carried on in five of the six demonstration center districts. Portions of the highly popular enrichment program can be demonstrated to have been adopted by well over fifty separate school districts.

5. The effect of these program prototypes on general education programs can be demonstrated. Upgrading of curriculum content has occurred not only in the special programs for the gifted, but also in the total educational programs of school districts.

6. The majority of districts demonstrating or adopting program prototypes established more than one prototype. Our summer demonstration programs, with their accompanying teacher training workshops, demonstrated all four of the program prototypes in articulation with one another. Therefore, it may be concluded that a more diverse range of educational needs of gifted children were met by the adoption of provisions of multiple programs.

7. The objective of "demonstrating specific educational programs for different types of gifted children, such as low achieving, high achieving, special problem,and other types of youngsters," was our weakest accomplishment. However, it can be shown that the special classes prototype has been adopted by districts wanting to accomodate their "highly gifted" students. Also, the

applicability of the counseling instructional program prototype to underachieving students is apparent though not fully demonstrated.

The following brief discussion of unsolved problems should indicate points of departure for future "action researchers." Our overriding problem was that of communication. The impossible task of controlling separate operations separated by hundreds of miles with inadequate administrative staff may be used as our rationalization for the incomplete solution of communication and logistical problems. Also, the reality of existing organizational structures within the cooperating school districts should have been taken into consideration when the initial program prototypes were proposed for establishment in these centers. State civil service regulations allow consultants to function reasonably efficiently within established consultant roles. Most district policies help rather than hinder adaptation of curriculum innovation to the demands of administrative and public relations considerations. However, consultants chosen for creative qualities cannot operate effectively within rigidly defined state standards in districts where policies are highly specialized. Clearly, future action research programs will need to describe a level of staff operation autonomous from rigid state requirements and with sufficient authority to innovate changes in the locality of operation.

One of our most serious handicaps was the lack of sufficient state financial support for the development of quality educational programs for gifted students. The school districts with which we worked had available only $40 of excess cost money per pupil per year with which to identify the gifted and conduct programs. It was apparent that most of these programs could have been more highly refined had there been available a wider range of pupil materials with which to work. Furthermore, demonstration programs were hampered by interpretations of what constitutes "equipment versus supplies." At the elementary school level, much of the need for additional help for students is in the form of educational equipment. However, current state regulations obviate the purchase of equipment. One of the key reasons why summer programs were comparatively successful may be the increased availability of vast stores of equipment and supplies.

This project did not have a "coordinating committee" of outside lay and professional personnel. Therefore, policy was difficult to construct and enforce.

As with many programs for mentally gifted minors in the state, the demonstration program suffered from a lack of adequately trained teachers. Hence, much of the developmental effort had to be diverted to inservice teacher training.

While California Project Talent was adequately staffed to perform the program development, demonstration and evaluation functions, unanticipated problems, and insufficient secretarial support caused somewhat haphazard program dissemination and export. Educational programs do not consist merely of written guidelines mailed or handed to other district personnel.

The project application recognized that a program may be exported to and adopted by the next district only if it is accompanied by appropriate long-term "floating" consultant services. The same group processes must be accomplished in the district of export as were accomplished in the district of inception of the program. This finding of the Project reinforces previous research findings on educational change and dissemination.

The quality and validity of the educational program does not insure its adoption by a foreign school district. Unfortunately, attitudes and other biases of the staff members in a new district appear to count more than the proven qualities of the prospective educational program. Those politically opposed to special classes tend to remain opposed to these classes in spite of the best intellectual efforts to show special classes as a valid program prototype. Conversely, underveloped programs may be adopted because of their social appeal, not because of their proven usefulness. It would appear that action researchers need to consider more seriously the psychological and sociological implications of educational change. Self-assessment and other procedures need to be considered as ways of changing emotional and attitudinal predispositions.

To conclude, California Project Talent should be rated as a reasonable success. It has shown that educational programs can be invented, planned, developed, and demonstrated in varied operational settings. Program export has proven possible, a crucial factor being the provision of an adequate staff to work with adopting districts. California Project Talent represented a series of steps which developed effective ways of translating educational research into classroom practice. Future demonstration projects, however, should recognize fully the parameters involved in developmental and dissemination efforts within the operational school districts.

Individual Placement Project -- An Accelerated Program for Intellectually Gifted Pupils, Utilizing the Summer School

by

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Explanation of the Individual Placement Project

The Individual Placement Project for academically talented pupils in the elementary schools is a unique form of acceleration which utilizes the summer school and involves no actual skipping of grades. Academically advanced and talented pupils are identified at the end of the second grade. These pupils are placed, according to their individual needs, into a special tutoring program in the summer which substitutes for the third grade. During their fourth and fifth grades, periodic evaluations will be made to establish their progress and appraise any special requirements they may have. An individual counseling and tutoring program must supplement the experiences of these children during their fourth and fifth grades. At the end of the fifth grade, this advanced placement group will be re-evaluated with a view toward placing those pupils with sufficient readiness into a special substitute program which would substitute for the sixth grade. This program is described in more detail in a paper entitled, "The Individual Placement Project for Academically Talented Pupils in the Elementary Schools."

Special Problems

It should be emphasized that the Individual Placement Project is essentially an administrative device to accomplish acceleration without skipping. However, acceleration is not an end in itself. The main purpose for accelerating children is to place them with a peer group more like themselves in order that they may be adequately challenged, stimulated, and interested in their everyday program. This administrative procedure, even when it is carefully thoughout out, must be supplemented by other experiences. The talented child who is accelerated does not cease to have highly specialized needs. He may require special counseling, tutoring, special projects, or other enrichment activities in the grade into which he is advanced. He may still need to interact with other gifted pupils with whom he is placed.

Special problems may arise when, in spite of the careful identification processes to be utilized, pupils are still misplaced in the substitute summer programs. These problems will not be so severe if we are entirely forthright with parents, children, and teachers in all phases of this program. For example, if the parents realize that participation in the substitute summer program is not an automatic "ticket" into the fourth grade, they will be able to understand and, hopefully, agree with some new decision that may be reached by the special teacher during the summer program. There is no special formula to avoid disagreement, disappointment, and other unfortunate experiences. If the parents and the child have been intimately involved in the identification, placement, and educational processes of this program, they will probably agree right down the line with any decision that is forthcoming from the certification committees or special summer program teachers.

Some special problems may arise with those children who are not accelerated even though they have been screened. Again, no strategic problems will arise,providing we are completely open-minded and forthright with all parents. We have just as much obligation to the parents and children who are not accepted for participation in the program as we do for those who are accepted. We owe the parents of a child who was not included a full and thorough explanation of why he was not included. If the explanation is academically and psychologically sound, the parent will undoubtedly agree with us wholeheartedly. In fact, we would prefer the parents themselves to make many of these crucial decisions.

The Special Need for Individual Attention for the Pupil

The cornerstone of the Individual Placement Program is the individual treatment of the pupil. The success of this program depends upon the extent to which local districts thoroughly study and cater to the individual needs of the participating pupils. Make no mistake about it, this aspect of the program may be expensive. However, it would seem that we have a special ethical obligation to see to it that mistakes simply are not made. Mistakes need not be made providing each child who participates is thoroughly studied and receives any special tutoring or counseling which may be necessary for his individual adjustment into the special summer programs and the advanced classes into which he will be accelerated.

Extra Costs to Participating Districts

This program has been approved by the State Superintendent of Public Instruction as an acceptable program for mentally gifted minors. This means that any excess costs incurred will be reimbursable as an approved mentally gifted program. It is permissible to include pupils in this program who are not technically "mentally gifted," but whose prognosis for success is such that acceleration is indicated. This is a "three-semester" program even though only "two semesters" are reimbursable from the currently available excess-cost monies. Therefore,it is recommended that the two most costly semesters be included and accounted for excess reimbursement purposes. These two semesters would be: (1) the winter-spring semester (February through June) in which most of the identification and first counseling and tutoring costs are incurred, and (2) the special summer program in the summer school.

Excess costs during the spring semester should take the form of: (1) individual identification costs, (2) counseling with the pupil and his parents, (3) tutoring for those pupils with special needs, (4) in-service training for teachers, and (5) special curriculum development and consultation with teachers, parents, and pupils concerning curricular needs.

Reimbursement for excess costs incurred during the summer will probably occur in the following fiscal year and would include: (1) extra instructional costs, especially in the form of special tutoring time teachers devote to the participating pupils after school during the summer; (2) any special counseling necessary for the participating pupils; (3) extra materials such as reading laboratories, spelling laboratories, reference books, and project materials not ordinarily bought; (4) possibly, excess transportation costs; and (5) consultant costs, particularly curriculum consultant costs.

Excess costs will also be incurred during the fall semester when the pupils are placed in the fourth grade and during the fifth grade. These special costs will take the form of: (1) any special counseling or tutoring necessary to accomplish the pupil's full adjustment to his advanced class, (2) consultant services for the teachers with whom the participating pupils are placed in advanced classes, (3) follow-up costs including group examination costs, and (4) any special project materials needed by the pupils in their advanced classes. Once the program is operational, this Individual Placement Project can be considered an "ongoing program," and all of the excess costs pertaining to the program could be computed on a semester basis, excepting, of course, those costs attributable to pupils who are not legally mentally gifted. For example, once identified and after being exposed to substitute summer school, a given pupil might incur up to legal maximum excess costs for tutoring in the fourth and fifth grades.

The extra materials needed to implement and facilitate this program will be determined at the local level and specifically adjusted to meet the needs of the local districts educational philosophy and normal third-grade and sixth-grade problems. The extra personnel needed to expedite this program include the following: (1) a guidance consultant with training in the administration of individual tests and with research experience, (2) a curriculum consultant with elementary curriculum development training and an ability to work closely with teachers, psychologists,and others in the individual development of courses of study suited to meet very specialized individual needs, and (3) special summer school teachers whose background and training in education render them "master teachers" with a special skill in dealing with exceptionally talented and creative children.

Providing the special program provisions outlined above are carried out, it has been estimated that this program will cost $60 in excess costs a year per pupil on the average. This figure is based upon an exhaustive study of the 188 school districts which offered programs during the 1961-62 fiscal year. Currently, $50 of these costs will be reimbursable for those pupils who are legally mentally gifted. However, there will be an undeniable saving to the district in terms of providing four or five rather than six years of education to the participating pupils. Of course, this saving is only incidental. We are concerned only with the full development of pupil potentiality.

Estimated Cost Breakdown on Per Pupil Basis:

Spring semester: (1) Identification - $15; (2) consultants - $5; (3) tutoring - $5; and materials - $5

Summer semester: (1) Instructional - $10; (2) materials - $10; and (3) consultants - $10

Special Program Facilitation

After a district has decided to participate in the Individual Placement Project, the following specific steps need to be taken in order to launch, facilitate, and implement the program:

1. The district must re-evaluate its educational philosophy and make sure that this particular kind of program correlates with their unique situation. Where contradictions or differences of opinion exist, there should be healthy discussion, clarification, explanation, and modification. Perhaps this step is best expedited by a special districtwide committee whose functions would consist of overseeing the entire Individual Placement Program.

2. All of the teachers in the district should be acquainted with the proposed program. This can be done efficiently by means of one or more general in-service meetings. During these meetings, the entire project would be explained to the district professional staff. More specific in-service meetings and training would follow for those persons specifically involved in the project, such as the summer school teachers, consultants, and other related personnel. In-service training for the participating personnel should be devoted to: (1) understanding and implementing the district's educational philosophy and the goals of the Individual Placement Project; (2) identification techniques and procedures; (3) the nature of the gifted and talented child; (4) the curriculum procedures and materials to be utilized during the substitute summer programs; (5) the development of special evaluative techniques such as report cards, satisfaction rating sheets, progress reports, etc.; (6) the development of adequate followup procedures and the stimulation of lines of communication between and among consultants, special class teachers, and advanced placement teachers.

3. Nomination forms and procedures need to be developed and distributed to second-grade teachers. Suggested nomination forms will be developed by the state coordinating group; however, a particular local district may wish to modify these forms for its own purposes. Nominations would come from regular teachers in the second grade. The teachers would nominate pupils who in their judgment matched certain criteria which would be provided. These criteria would include estimates of the child's intellectual, emotional, social, and physical functioning.

4. From the pool of nominations, the guidance consultants must identify and develop a case study for those pupils who will participate in the special summer programs. This identification and case study process will be summarized in a document entitled, "Individual Placement Project Certification and Summary Form." It must be emphasized that the identification case study process does not merely involve individual examination with the Stanford Binet or the W.I.S.C. Rather, it involves the gathering of minimal data in the areas of: (1) academic background and proficiency, (2) objective test results, (3) intellectual functioning, (4) personal interests, (5) personality and emotional stability, and (6) social maturity.

5. A placement and certification conference must be held, attended by the guidance consultant, nominating teacher, parents, and an administrative representative. All of the committee members would sign a certification document indicating their approval for the child's participation in the project and, where appropriate, their certification of legal "mental giftedness." This committee would see to it that adequate followup, counseling, tutoring, or any other special implementation was forthcoming in the case of a particular child.

6. Special counseling and tutoring should be available for any participating pupil who needs it. This special tutoring or counseling might be needed prior to his participation in the substitute summer program during the summer program, or sometime following the summer program. Perhaps the easiest way to implement this step is to designate members of the professional staff whose assignment would include special tutoring or counseling for pupils needing it.

7. The special substitute summer programs would need to be developed, with emphasis upon special tutoring for individual pupil needs. Suggested curriculum will be developed for all of the participating districts. However, a given district may wish to deviate from this curriculum in terms of its own specific educational philosophy. In general, skills, methods, and specific learnings generally offered in the third grade would be emphasized. However, a given pupil may have certain weaknesses as, for example, in the area of arithmetical skills (especially spelling and writing), creative writing, and study habits. Generalizing from third-grade programs, the following time breakdowns in terms of percentage of time devoted to a given area follow: (1) language arts, including reading, literature, spelling, oral and written expression--40 percent; (2) social sciences--12 percent; (3) arithmetical work--8 percent; (4) science and health--10 percent; (5) combined art-music--10 percent; and (6) the rest of the time for planning and evaluation. It is suggested that the six-week summer programs be designed on a full-time basis to include five forty-minute periods with at least one twenty-five-minute play period.

8. Follow-up and evaluation. Professional personnel will need to be designated for the evaluation portion of this project. The participating pupils will need to be studied periodically, preferably each

year, by means of objective tests, indications of satisfaction, and teacher ratings. The follow-up procedure should also focus upon the individual pupil, offering him special opportunity for tutoring and counseling.

Summary

In order to prepare for participation in an "Individual Placement" type of program, the following documents should be studied: (1) The Individual Placement Project for Academically Talented Pupils in the Elementary Schools, (2) the Articles defending acceleration by Pressey, Mirman, and the speaker, (3) Developing an Adequate Case Study, and (4) Suggested Curriculum Development for the Substitute Third Grade.

In the process of developing the Individual Placement Project, we have generated many useful materials, including case study forms, identification procedures, suggested curriculum development, and specialized counseling and tutoring techniques. This Project has stimulated acceptance of acceleration products by many school districts in California. It has shown that acceleration programs can be demonstrated at a time when teachers are available for observation; also, it can be articulated with other program possibilities in the regular school year.

Counseling-Instructional Programs for Intellectually Gifted Students

by

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The Counseling-Instructional Program emphasized instructional, counseling, and guidance processes and goals. It was located in the San Juan Unified School District in Sacramento County. Here group counseling was coordinated with and reinforced curriculum development in English and social science classes for gifted students in grades seven through nine. Small group sessions enabled students to discuss in depth mutual problems, challenging ideas, and intellectual interests. Following each session, the counselor and the teachers discussed implications of the counseling session for planning related classroom activities.

Eligibility of students in the demonstration program was based on state criteria for identification of "mentally gifted minors." Screening was accomplished through use of group test scores. Any student whose reading or arithmetic achievement score and ability score fell within the top two percent was considered eligible. The only additional screening was subjective judgment of teachers or counselors. They recommended students who would benefit from and contribute to small group process, and those who might be helped. Selection was the responsibility of the staff within each school.

To increase understanding of each student's academic and guidance needs, background information was obtained from each student and from cumulative records. As defined by the Dictionary of Occupational Titles, occupations of fathers were categorized as: (1) professions requiring four or more years of college; (2) professions obtained through training; and (3) "other." Occupations of fifty-two percent of the fathers fell in category (1), thirty-one percent in category (2), and seventeen percent in category (3). Thirty-seven percent of the mothers were working outside the home. Special lessons outside of school were taken by fifty-nine percent of the students. Seventy-eight percent had held a class office at some time during their school years. Most parents and students were either in agreement on student choice of a career or had no preferences yet, and twelve percent of students and parents differed on choice of a career.

Scores on the high school personality questionnaire indicated that boys in this student group were significantly more reserved and critical, more assertive, more individualistic, more prone to worry, more self-sufficient, and more self-controlled than average male students. The gifted girls were significantly more enthusiastic, less rule bound, and more individualistic than average female students.

As part of their exploration into values and value systems, student participants were administered the Survey of Interpersonal Values. The six values measured were: Support, Conformity, Recognition, Independence, Benevolence, and Leadership. A heterogeneous population of California high school students indicated that Recognition is the only value which did not differ significantly between boys and girls. Girls in the heterogeneous group rated Support, Conformity,and Benevolence as having higher value than did the boys; they rated Independence and Leadership as having lower value than did the boys. Scores of the gifted students in the demonstration program, however, did not show significant sex differences on Recognition, Conformity, and Independence. Compared with the heterogeneous male group, the gifted boys gave significantly less value to Recognition. The gifted girls gave significantly higher value to Independence than did the girls in the heterogeneous group.

Physical fitness and physical education grades were reported by Donna Vial, senior student at the University of California, Davis. When compared to norms established on a state-wide basis, gifted ninth grade girls ranked at the ninety-fourth percentile on the 600-yard run-walk, the seventy-seventh percentile on the 50-yard dash, the sixty-fourth percentile on sit-ups, and the seventh-third percentile on the shuttle run. Norms were available for the ninth grade boys on only two test items. The gifted ranked at the seventieth percentile on the state-wide scale for the pull-up items and at the eightieth percentile for the standing broad jump. Comparison of physical education grades indicated a grade point average of 3.4 for the gifted boys and 2.8 for the average. The gifted girls revealed a grade point average of 3.0, while the average group had 2.5.

As an introduction to studying gifted students, it was found helpful to assess attitudes toward the gifted early in the in-service training program. Expressions of opinions and beliefs enhanced interest in subsequent discussions on research findings. A useful device for stimulating the sharing of ideas on characteristics of the gifted was the Attitudinnaire on Mentally Gifted Minors,which was developed by the guidance committee. Administered to Project Talent teachers and counselors early in the year, the Attitudinnaire yielded instrumental clues for areas on which to focus for further study. Items on the reaction sheet included popularly held opinions which have been invalidated by research, as well as some statements on debatable problems. Respondents were asked to mark "agreement," "disagreement," or "?." The San Juan personnel demonstrated considerable sophistication in their reactions. For example, all the Project personnel disagreed with the following statements:

> Very bright children are usually impractical.
>
> Intelligence is a characteristic which interferes with common sense.

> Identical educational experiences will promote equality of educational experiences.
>
> Any program for bright children will meet the needs of the gifted.

All these teachers agreed that if a student has already acquired skills being taught, creative projects might be substituted for the usual class assignments. Important concepts on which the reactions indicated considerable diversity of opinion were further explored by the group. For example, slightly over one-half of the respondents agreed that tests of acquired learning should differ for the gifted from those designed for the average, but an almost equal number disagreed or could not decide. Consequently, meetings were devoted to analysis of intellectual operation, objectives of testing, and the implications for measuring achievement of gifted students. Other areas which needed further study included the variability of attributes among gifted people, basis for class placement of children with chronological peers, with social peers, or with intellectual peers, and expectancy for classroom productivity for gifted students.

Because the counseling-instructional program is a creative product of counselor and teacher interaction, materials are predominately ideational. Scope and sequence of program content depend uniquely on the particular students involved. Level of difficulty need not be observed, since the range of ability and achievement within grade levels probably will always exceed the range between grade levels. For example, the most intellectually mature seventh grader was able to handle more advanced concepts than the least mature ninth grader. It was also interesting to note that many groups in the demonstration program reconsidered topics of the preceding year and probed deeper into ramifications which they had earlier failed to perceive.

The following small group topics are examples of interest and concern which were discussed by the groups in the demonstration. Although most of the groups enjoyed the independence of proposing their own topics, some preferred to rely on the counselor to suggest an idea. The counselors reported that seventh grade groups tended toward this dependency.

Here are some examples of topics that might be categorized as divergent thinking:

1. What would happen if by the year 2000 only 10 percent of the population had to work?
2. If everything in the world were free and available in unlimited supply, what would be the effect on people's behavior?

3. What if man would be able to live to 200 years of age?
4. What would life be like if we closed all of our schools for 20 years?

Here are some examples of social concerns--and this was the category which seemed to have the most numerous topics:

1. Teenage drinking
2. Should women be drafted?
3. Objectives of incarceration for crime--punishment or rehabilitation?
4. Conflict between values of adults and youth and between groups of young people
5. Will a woman ever be president of the United States?
6. Foreign aid vs. poverty within the United States
7. Automation and attendant problems--will machines take over?

Here are some examples of scientific topics--and this was, interestingly enough, one of the least popular categories:

1. Extrasensory perception
2. Progress in medical science
3. Space race

Governmental issues were of some concern, and here are a few examples:

1. One world government. Can mankind agree and end war?
2. Division of California into two states
3. Problems of censorship--or should there be censorship?
4. Viet Nam and related problems
5. Governmental control vs. individual rights

Although this next category was not one of the most popular, they did discuss religious man, and here are a couple of examples:

1. What is the role of tangible proof in faith?
2. Predestination and free will

The category that had the most numerous topics, next to social concerns, was psychological concerns:

1. Stress from pressure for grades
2. What is "being normal"?
3. What are the causes of unusual behavior?
4. Personality--is it innate or environmentally shaped?
5. The possibility of changing or controlling human behavior through drugs

Here are a few examples of educational issues which were discussed:

1. The philosophy behind a grading system
2. Characteristics of good teachers
3. Grouping for learning--is it beneficial?

Moral concerns were discussed, such as cheating, should people inform on cheaters, and problems of honesty.

An important emphasis of the counseling-instructional program was exploration of attitudes and values in order to gain increased insight into the great ideas of man and history of the culture. Measurement of attitude not only poses difficulties in assessment, but occasionally invites controversy over potential invasion of privacy. However, a careful attempt was made to sample certain attitudinal changes. An original opinionnaire was devised by a committee of teachers and counselors and submitted to several classes for student criticism. Comments and suggestions were considered and a revised form was developed. There was no intention of ranking the values incorporated in the forty statements on the form. Rather, students were requested to rate each item according to their opinion of its importance in a value system, from (1) Not Important to (5) Extremely Important. The Social Values Opinionnaire was given to Project participants in the fall and again in the late spring. Certain interesting changes were noted as, for example, considerable increase in rated value was observed on the following concepts:

> The individual person is himself a unique center of power and value. He does not exist for the state.
>
> Respect for the talents and beliefs of others is basic to our way of life.

At the present time, the Social Values Opinionnaire is considered most useful as a stimulus for discussion of values in "American Way of Life."

As one method of evaluation, reaction sheets were presented to parents. These reaction sheets did not request identification of either parent or child. The majority of parent ratings indicated growth in the behaviors on which the program focused. Because most of the students came to the program as strong students, it is not surprising that more than one third of the parents saw no improvement in the quality of the student's school work. Exceptional growth was reported in every area to some extent. The highest percentages of exceptional growth ratings were given on:

1. Willingness to consider more than one solution to a problem
2. Interest in learning
3. More creative thinking

Teachers were also asked to react to a check-list. For the majority of students, ratings by teachers indicated growth in the behavioral objectives. Seventh and eighth grade teachers noted the greatest evidence of exceptional growth in areas related to self-understanding, social conscience, tolerance for ambiguity, quantity and quality of production, response to challenge,and use of the teacher. Ninth grade teachers gave the greatest number of exceptional ratings in areas related to love of learning, social conscience, tolerance for ambiguity, creative thinking, quantity and quality of production, response to challenge,and use of the teacher.

Concern for school marks was incidental to interest in finding growth in such behaviors as having a "need to know," valuing learning for its own sake, and quality of intellectual productivity. The significance of grade points as avenues to advanced education, however, cannot be ignored. Although school marks were not an element in the criteria for selection of students, it is not surprising to find that the mean average of grade point averages was B or above for these gifted seventh, eighth,and ninth graders.

Averages for girls exceeded the boys' averages--a finding not unusual for these age groups. Grade averages rose for boys' groups at each grade level, but the only girls' group which showed improvement was at seventh grade. The stability of grade point average for girls at eighth and ninth grades was of particular interest in relation to an Illinois study, which indicated a strong tendency for gifted adolescent girls to drop in grade point averages.

Student participants in the program were requested to respond anonymously to the question sheet. Most of the students perceived changes in their feelings about themselves and others. They felt that the group discussions had an influence on these changes and helped them to listen better to the ideas of others and to express their own ideas better. They felt the meetings were worthwhile and would like to continue to participate.

Continual evaluation in conjunction with courage to innovate are essential to program development. The counseling-instructional program has not been presented as a final project, or as a problem-free model program. It was intended to serve as an example of one procedure for enhancing learning in English and social science,with particular attention to characteristic needs for learning and guidance of the gifted young adolescent. Special advantages of the program are opportunities for closer communication among teachers, counselors and students, and the unlimited possibilities for personalizing and varying learning experiences. The program lends itself to interpretative adaptation according to local school districts' needs and philosophy. It is a program which will prosper as a creative product of human interaction in a knowledgeable and imaginative environment.

Special Classes for Intellectually Gifted Students

by

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California Project Talent was designed to demonstrate and to evaluate four prototype programs, one of which was the full-time special class for elementary school children. This preliminary report is a resumé of a full report scheduled for publication by the California State Department of Education as a part of a cooperative research project* concerned with the education of intellectually talented students. Five phases of the special class program will be reported briefly: (1) Research Which Preceded Project Talent, (2) Administrative Provisions, (3) Curricular Decisions, (4) Recommendations for Initiating Programs, and (5) Prototype of a Special Class Program.

Research Which Preceded Project Talent

In the schema for educational research, demonstration projects are based on the dual assumptions that experimental research preceded the project and that empirical results from that research provide a rationale for the approach which is being demonstrated. The design for the special class prototype was based primarily on the California State Study conducted by Ruth Martinson over a three-year period (Simpson and Martinson, 1961). Pertinent data have been drawn from the published report and incorporated in Tables 1 and 2. For the purposes of this demonstration we were concerned with the results of special classes conducted and evaluated at grade levels four, five, and six.

Three kinds of special classes were established and evaluated in the statewide study: (1) the Saturday Class, in which community leaders and school personnel worked with gifted children on specialized projects; (2) the Part-time Interest Class, in which qualified children were drawn from their regular unsectioned classes for an afternoon each week to explore student-centered problems; and (3) the Special Full-time Class, which was comprised wholly of identified children sectioned for the entire curriculum. For all groups the Stanford Binet Intelligence Scale was used, on which the minimum score for qualification was 130 IQ. The purpose of the Martinson study was not to compare one type of special class with another, but rather to evaluate the effectiveness of many different programs which various school districts in the State of California had reported they had in operation. The present comparisons were

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*Project #D-072 was funded in part by the Cooperative Research Branch, United States Office of Education

based on data on the Sequential Tests of Academic Progress reported in the Martinson study (Table 1). A theoretical gain of approximately 5.3 was indicated in the publisher's manual at these grade levels. Control pupils were matched for chronological age, IQ, sex, and socioeconomic status. Initial academic performance variations were controlled statistically so that the variable in this study--after identification and initial testing --was the educational program (Table 2). The pre-test score was comparable for all groups, ranging between 270.0 and 270.9. Note that Saturday classes and special full-time classes both showed statistically significant gains (beyond the .01 level) for experimental groups over control groups. To the designers of California Project Talent, the establishment of special full-time classes at elementary school level seemed to be indicated by this evidence.

Ruth Martinson's study was important background for other reasons: (1) the range of ability one might expect in a special class was indicated, and (2) the levels at which different children could function in academic work was suggested. The experimental groups in the special classes of grades five and six numbered 237. Their range on the Sequential Tests of Educational Progress (STEP) showed achievement levels from normal for the grade to above national norms for college sophomores at the time the gifted children were finishing the fifth or sixth grade. The mean achievement scores for the experimental subjects at the end of the study approached national norms for eleventh grade. The upper quarter (57 pupils) were above national norms for grade twelve on the STEP test. Clearly, curricula were needed which would allow children whose present functioning was at grade level to work upward from that point, as well as to provide for children whose grade level functioning reached into the senior high school and the college.

Of many previously published studies on special class organizations, most included in their experimental groups pupils who fell within the average range of the academic continuum. Usually the published report did not describe the curriculum which was provided. Four studies, in addition to the Simpson-Martinson study, were selected for their relevance to the demonstration project: (1) the Dvorak and Rae (1929) comparison of segregated first grade classes; (2) the Breidenstine (1936) comparison of pupils in differentiated groups; (3) the Barthelmess and Boyer (1932) evaluation of ability grouping; and (4) the Savard (1960) evaluation of limited-range grouping. These studies, together with the California State Study, appeared to justify the following summary:

- Superior gains resulted when programs were adjusted to student abilities.

- Ability grouping in the absence of program adjustment did not result in superior gains for sectioned, compared to non-sectioned, pupils.

- Surveys of parents, teachers, and students showed generally favorable attitudes toward special classes.

- Sociometric measures showed no negative change of status for experimental pupils among their peer groups.
- Some evidence was noted that the amount of time spent in special class was related to the achievement gains of students.
- Data were lacking on emotional development of special class students.

The purpose of the special class demonstration in California Project Talent was to establish centers for curriculum development and dissemination, to observe the administrative problems which special classes entailed, and to evaluate the results of the programs.

Administrative Provisions

In view of the evidence which favors special classes, why is the mortality rate for this type of program so high? In talking with school district personnel in many parts of the state, several reasons were cited frequently. Changes in personnel often resulted in a discontinuation of special programs. Usually the person who was responsible for the success of the program was promoted to a position where his personal attention was dispersed to many other programs.

Sometimes lack of sufficient curricular adjustment resulted in lack of compensating advantages for the problems created when special programs were established. This factor was related to problems of articulation. Recall the academic achievement levels of the children in the special classes! When adjustments in the levels at which children work are less than adequate, potential gains in their academic achievement need not be expected. For example, children beginning their second year of special class programs in Lompoc entered the sixth grade with a reading ability range from about seventh grade to senior high school and college levels. To quote one teacher, "We haven't found a ceiling for some of these children." If curricular adjustments in literature, social science, and library reading are no greater than a grade or two, what is being accomplished by special grouping? The gifted child tends to increase the gap between what he already knows and typical grade materials as he moves upward. Many special programs have not shown positive results because curricular adjustments were inadequate.

The need for unique materials was reported as a handicap in some district programs. The obvious plan, that gifted elementary school children use high school material already available within the districts, usually has not been successful. A common experience has been that junior and senior high school teachers and librarians resist the loan of materials to elementary pupils. Several other conditions also indicate the need for materials which are selected specifically for special class programs. Materials need to be geared to interest levels for which the elementary school child is socially and biologically prepared. Special class children have pre-teen chronological ages, coupled with post-adolescent mental ages.

The main reason some special classes have encountered parent resistance is the widespread problem of grading. In the Lompoc Unified School District a policy was formulated which had the effect of supporting teachers in their dual need to discriminate between good and poor work within the special class while recording a grade comparable to that which the gifted child should have received in a regular program. The Davis Unified School District Project used conferences and self-evaluation leading to the final grades. During Project Talent, research consultants talked with parents of hundreds of gifted students. Of those who initially opposed a special class for their child, the reason given most often was apprehension about inequities in grading. "I want my child to get into a good college. When he goes into one of these special classes, he works harder and gets a "B," whereas in regular classes he gets "A." A district grading policy for special classes is essential.

Affective factors are important--the philosophical or historical orientation which people have that colors what they see and believe. People tend to hear what they want to hear and tend not to hear what doesn't fit their private framework of thought. For this reason, the special program for gifted children--or any special program which involves a small percentage of the student body--needs to be based on objective measures, even though these measures never tell us all we want to know about the effect of a program.

The two Special Class programs which became demonstration centers had been established prior to California Project Talent. Both were full-time classes; both involved elementary school children; and both used the selection criteria specified in the legislation for gifted child education in California. In Davis Joint Unified School District, the special class was called HAPS (for High Achievement Potential Students). Davis is a district of moderate size serving a university community. In order to bring together children with high ability in abstract thinking, as well as superior language development, the Wechsler Intelligence Scale for Children (WISC) was administered and criterion scores of 130 on all three scales were required. The children were brought together in one elementary school where unusual advantages in equipment and library were provided. The class had two rooms, one for study and discussion, the other for special projects and creative activities.

At the other demonstration center, Lompoc Unified School District, the special classes were called the Honors Program. Nine classes--three in each of grades four, five,and six--were organized in four schools. This district served Vandenberg Air Force Base and adjacent areas. Most students were selected prior to fourth grade. Approximately 250 pupils were involved in the program at any given point. The Stanford-Binet Intelligence Scale was used for identification, with a cut-off point of 130 IQ. Visitors to the Lompoc demonstration center had an unusual opportunity to observe the variability in physical, social, and intellectual characteristics which is typical of special classes when the selection criteria is IQ.

Curricular Decisions

When we look at the range of human ability, as measured by intelligence tests, and consider the well balanced configuration of the bell-shaped curve, we note at the upper end of this scale 2% who constitute the population involved in California Project Talent (Figure 1). I want to mention a widespread fallacy in this concept as far as programs for gifted children are concerned. This small segment of the continuum--this little area inside the circle--seemingly puts these children very close together in learnability. Such is not the case when you look at the individuals enrolled in special classes. These children range in general ability from a theoretical 130 IQ points (plus or minus 5 points for error) to some unmeasured quantity beyond the top of the test scale. The typical range in the special class is more than 30 IQ points, or more than 2 standard deviations. Imagine this open end at the ninth stanine extending outward for a base distance as great as the base distance of three or four stanines. Then you have a notion of the variability among gifted students. The most capable children are as much beyond the least capable in the special class as are the brightest children beyond the average children in a typical nonsegregated class. To analyze these differences in greater depth than is possible here, one might read the Barbe study (1964), "One in One-Thousand"--a comparison of the lowest and highest groups of selected gifted children in Ohio. We have not touched upon the unevenness in the ability profiles of individual students. This concept of uniqueness is necessary if curriculum planning is to be suited to the 98,000 intellectually gifted children in California, or to the individuals within any special class.

The Special Classes demonstration project was delegated particular responsibility for curriculum development in mathematics, science, and social science. Before discussing these areas, I would like to report some informal observations on programs in reading and literature. Reading ability is not genetic, instinctive, nor contagious: gifted children need to be taught reading. Several studies have shown that about half of the children in this kind of ability group are able to read at least enough to register an achievement score when they enter the first grade. One of the purposes of the special class program was to develop the kind of reader that many students never become: the mature, sophisticated reader who is versatile in his rate, his purposes, and his interpretations. If gifted children are to attain maximum potential as learners, they need planned developmental reading programs and the skillful guidance of teachers. Being good at word recognition and being a fast reader was not assumed to be the final goal in the demonstration centers. Several outstanding individualized reading programs were conducted, each offering a variety of materials and approaches. Whole group instruction was used for instruction purposes needed by all the children. Small groups were organized, especially for discussions of books.

Project teachers estimated that special class children read about four times more books than were read by their previous, unsectioned classes. Dorothy Wagner's fourth grade in Lompoc was housed in a new building and had over 30 children enrolled. The teacher conceived the idea of a private collection. The children, most of whom owned many books, were asked if they would like to loan books to the classroom library. Books were brought to school by the armloads. Systems were devised to classify, to categorize, to shelf, and to check books; standard library procedures were used to prepare a card catalog for their 500 volume library. The children learned about how librarians go about their work and obtained the use of many books.

Discussion groups were very popular in the special class reading programs. Both centers used the Junior Scholastic Series, trade anthologies on junior high school level, collections of paperback classics such as Kipling's Captain Courageous, and other materials. The typical procedure was to group children who were reading a particular title. Student discussion leaders were supervised by the teacher in selection, revision, or formulation of guide questions. Children learned how to formulate questions that went beyond the usual factual, or action, level of the story. Some teachers refined or revised the questions which were contained in teachers' manuals. Several groups of students evaluated their questions against Guilford's operation's category in the "Structure of Intellect" (1960, Figure 2). One fourth grader was heard to say, "Our questions weren't very good. The answers those kinds of questions required could come out of a tape recorder. We didn't have to think at all."

Mathematics - Curricula were based on the concept of acceleration of content. Each class moved through modern mathematics and mathematical logic at a rate the material could be learned comfortably. One very effective program was arranged by a team of teachers in which fourth, fifth, and sixth grade gifted classes were regrouped for mathematics and logic. For example, a child new to the district could work with the beginning group in logic and with an advanced group in basic mathematics. In addition to acceleration of content, enrichment materials--SMSG, Webster, and Madison Project materials--were used successfully.

Social Science - The decision was made to follow the grade level framework for California, but to use--at least in a limited way--the methods of investigation that were suited to the scientific study of groups of people. Curriculum areas were the following: at fourth grade level, California, including early California; at fifth grade level, the United States and Canada; and at sixth grade level, Latin America and World Geography. We knew of no particular reason why grade level topics should not be studied, but in whatever depth the gifted child was able to achieve.

Having decided to follow the state framework, four additional decisions were necessary. First was the organization of content to fit into units of study. Second was the choice of a social science discipline that had contributed in unique ways to that particular content. Third was the selection of major ideas to be developed--sometimes one or more of the generalizations published in the state framework. And fourth was the choice of a learning model to be used to raise the level of children's thinking.

One example of how this procedure worked in the development of social science curriculum is the fourth grade unit of study, "How the Anthropologist Studies Man" (Robeck, 1966). In California, most fourth graders study prehistoric life in the area where their school is located. In Lompoc this meant the study of Chumash Indians. Regarding the choice of a social science discipline, one need only survey available knowledge of primitive people to recognize the obvious contribution of anthropologists in studying people. From the twenty or more big ideas which were published in the framework, one generalization was adapted to our purposes: Anthropology is the study of man; how his culture evolved as a result of inter-action with his environment. Various teachers used Guilford's intellectual operations, Bloom's taxonomy of cognitive objectives (1956), or Bruner's processes of education (1960).

The plan of study for the anthropology unit included six categories. The first column was a sequence of major problems which took students from their previous historical-geographical orientation to the methodology of other social scientists: How do we study people? What different ways could we approach the study of man? How does the anthropologist work? What determines where people settle? These same major questions could be used as a study sequence for any group of California Indians--or indeed, of almost any group of American Indians. In the second column were concepts and terms which teachers anticipated the children would need to understand and to communicate this study. A need for such meanings as artifacts, archeology, and shaman was anticipated. The third column suggested techniques from which teachers might devise ways to direct the study of each problem. For example, the question, "How complete is our knowledge of the Chumash diet?" showed the expected need for student understanding of concepts such as evidence, inference, and radio-carbon methods of dating. Possible techniques were suggested: Compare the historical and anthropological remnants of the Chumash culture; cite the reasons discrepancies in historical accounts exist; tell why gaps exist in anthropologists' knowledge of the Chumash Indians; discuss the advantages shared by 19th century investigators; and compare with the advantages shared by 20th century investigators. In the fourth column, we projected the intellectual operation which students would be likely to use in finding answers to the questions. Fifth, we included a column of the resources children might use to obtain verifying information. Many children, even in fourth grade classes, used adult level materials. Others needed grade level materials for independent, reference reading. The selection factor for most books and documents was the appropriateness of the content for elementary school children, rather than readability level. The sixth and last column in this plan was teacher critique. This series of self-questions related to what the teacher had observed during the lesson, "Are students aware of the necessity for inference in the scientific reconstruction of past cultures?

Graphic and Fine Arts - I wish we were able to reproduce some of the hundreds of thousands of products created by children in the special classes. One reason they accomplished so much in the creative arts was that these students mastered basic content very quickly. They weren't held to the usual pace of classroom activities; hence, they had time to write legends, plays, poems, and autobiographies. Writing verse or fables was particularly popular because an idea could be developed and closure could be experienced during brief periods of time. Many special class pupils learned to play the recorder or the guitar.

Recommendations for Initiating New Programs

On the basis of experience in the demonstration centers, several recommendations might be made which apply to most special class organizations for gifted children.

Recognize Individual Differences - In a special class the range of specific abilities is tremendous. Most of the program should be geared to levels much higher than curricula in a non-sectioned class. I quote from a school psychologist's interview of an eighth grade student who had attended the special class program during fifth and sixth grades:

> In school before HAPS, I found I had adjusted to the different abilities of students around me and the interest of other students had integrated into mine. In regular classes, I had sometimes come to be looked upon as an egghead and different. In HAPS I learned that most of us had this problem. In HAPS, I did not try to play down my abilities in school so as to conform, because the average person now was up to my ability and the trend was not to be average but to excell. Now, in junior high, I try not to show off my abilities and not to act too intelligent, as long as it doesn't affect my school work. At my age, I am trying to conform to others, which I suppose is bad, and I hope to outgrow this feeling. However, I think there is hope for me because I realize I am different (as everyone really is) and know this is an asset.

Avoid Complete Segretation - The teachers of demonstration classes learned many ways to involve students in activities with regular classes. In a longitudinal evaluation of pupils' attitudes toward their special class program, the suggestions they made most frequently were related to involvement in the life of the school as a whole, and to less separation from other kids. Our students suggested that special opportunities be given to other classes so their own program would seem less conspicuous--such as choice of free period, unusual approaches to the study of world geography, and experimental studies in science. Organized games, intraroom activities, and involvement in a student government were ways the special class students enjoyed being involved in the school as a whole.

Select Secure Teachers - One of the essential features of a special class program is in-service help for teachers, including opportunities to share with other teachers who have similar responsibilities. Sources of materials, procedures for evaluation, and problems of motivation are common topics for discussion. Because of the small percentage of intellectually gifted students in the school population, the number of teachers involved in special programs is small. Therefore, intradistrict visitation and consultation with resource people is almost essential. Even though the teacher may be well founded in subject matter, he needs reinforcement from and communication with others who understand his work.

Stress Talent Development - The special class must be conducted to give pupils many opportunities for intellectual stimulation through artistic expression, communication, activities, and scientific experimentation. They can learn to formulate and to test hypothesis. Unless the school capitalizes on the inherent advantages of the special class organization, the administrative debits quickly outweigh the added responsibilities which are entailed.

Pre-Test the Students - One of the situations that sometimes develops when programs for gifted children are initiated is that the new program gets underway before the procedures for evaluation are determined. At this point, the time is past for the establishment of the baselines needed for subsequent evaluations. Baselines which the district uses for typical classes are inappropriate, including both local district norms and norms published by the test producers. A fair basis for evaluation of the gifted child's progress is his own pre-test score, multiplied by this intelligence coefficient. This and other forms of evaluation are essential if a program is to survive the administrative problems which special classes create.

Be Informed - One administrator of a special class that has endured many years told me three things he thought important in initiating programs for gifted students: be informed on research, be informed on evaluation, and be informed on curriculum. Many objections to special programs for gifted students, most of which are cited on doctrinaire grounds alone, have little impact on people who have been informed through objective sources.

Individualize the Instruction - The adaptation of curriculum to the gifted student's level and pace of learning is essential, whether he is enrolled in regular or in special classes. The essential differences in favor of the special class is that most instruction is geared at a high level,and most students are able to conduct a high percentage of their work independently. This enables the teacher to use individual conferences to analyze learning needs and to discuss their individual goals with the children. Suitable materials enable students to conduct special studies individually or in small groups. We estimated that a typical gifted student used about four times the normal amount of library materials, science equipment, learning laboratories, programmed courses, and other instructional material.

Prototype of a Special Class

During our visits to school districts outside the demonstration program, the question often was asked, "If you were planning a special class program based on your experience, what would it be like?" There is no one structure for all school districts, because of variations in basic support, in parent goals, and in the percentage of gifted students a school district may expect to identify. Transportation and housing facilities vary. The district which is bisected by a freeway will organize the special program differently than will the district which is small and isolated. However, if I were to suggest a program which would avoid most administrative problems, and at the same time capitalize on the special class structure, I would consider a prototype which kept the elementary school child within his own school building. In order to organize a full class group which would qualify for maximum excess cost support at state level, I would consider an ungraded upper-elementary or a combined fifth and sixth grade class. Some school districts have operated gifted child classes effectively with a combined fifth and sixth grade special class which carried no particular label. A few highly selected gifted children from fourth grade, who were candidates for acceleration, were sometimes added to this group. Another characteristic of this prototype special class would be the involvement of a team of two or three teachers, each of whom would have a homeroom class and would teach their areas of special competence: science and mathematics, reading and language arts, or social science. The other two or three groups of children involved with this team could profit also from being assigned to highly selected teachers. This arrangement makes use of professional strengths in a staff, gives teachers of the gifted children someone with whom to confer, and eliminates some of the rivalries that can develop over special class assignments.

Any prototype program which made use of contemporary developments in education would be based on conscious application of a learning construct. Frequently I quote Robert Hutchins, "He who is without theory can never be anything more than a technician." The responsibility of the elementary school toward the gifted child is to teach him to seek knowledge, to organize it, and to use it in creative and constructive ways. A learning theory model is indispensable in classrooms where the goal is raising the level of children's thinking.

Special class students should have opportunities for counseling or advisement. Open discussion of problems common to gifted children is extremely important and usually can be conducted on an intellectual level by an interested, professional adult. Sometimes the principal, the school psychologist, and the classroom teacher can schedule a regular time to divide the class for group discussion sessions.

And last, I would involve the teaching staff in planning and reviewing the evaluation procedures. The receiving teacher has much to learn about the atypical child from the teacher who knows him well. By involving the staff in evaluation, the air is cleared for planning the particular learning environments which these children need. Thus, all the teachers can learn to make more adequate adjustments to individual learners and to make more valid referrals of new students for gifted programs.

We discovered no best prototype program for all intellectually gifted children. Each decision about an individual's educational placement must be weighed against the considerable disadvantages, to the atypical student, of pursuing a typical curriculum. Teaching the special class was found to be extremely hard work. Teachers estimated their planning time at approximately double their typical class load. But the rewards of teaching intellectually gifted children were many. Teaching one lesson in poetry brought one demonstration center teacher twenty examples of positive reinforcement.

From a sixth grade boy:

STEEL

Out of the ground, out of the earth,
That's how steel is given its birth.
Taken out of the earth rough and hard,
Melted down as soft as lard,
Hot and melting, then cold as can be,
Finally sent out of the factory.
Used in trucks and boats and cars,
Used in rockets sent to the stars.
Used in hundreds and thousands of things,
All from the ground,
The lowliest of things.

-- by Karl

From a sixth grade girl:

MONEY

Money means to different people
Many different things,
To some it means food to eat,
To some diamond rings.

To some money buys a mansion
And a Wife,
To some money brings a chance
To live his life.

Money brings to some a car or
A vacation,
Money may bring to others
A college education.

To the girl across the street
Money will buy a dress,
But me, I know money
Can't buy happiness.

--by Jane

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Table 1

PUPIL ACHIEVEMENT GAINS IN STATE STUDY

GRADES 5 & 6

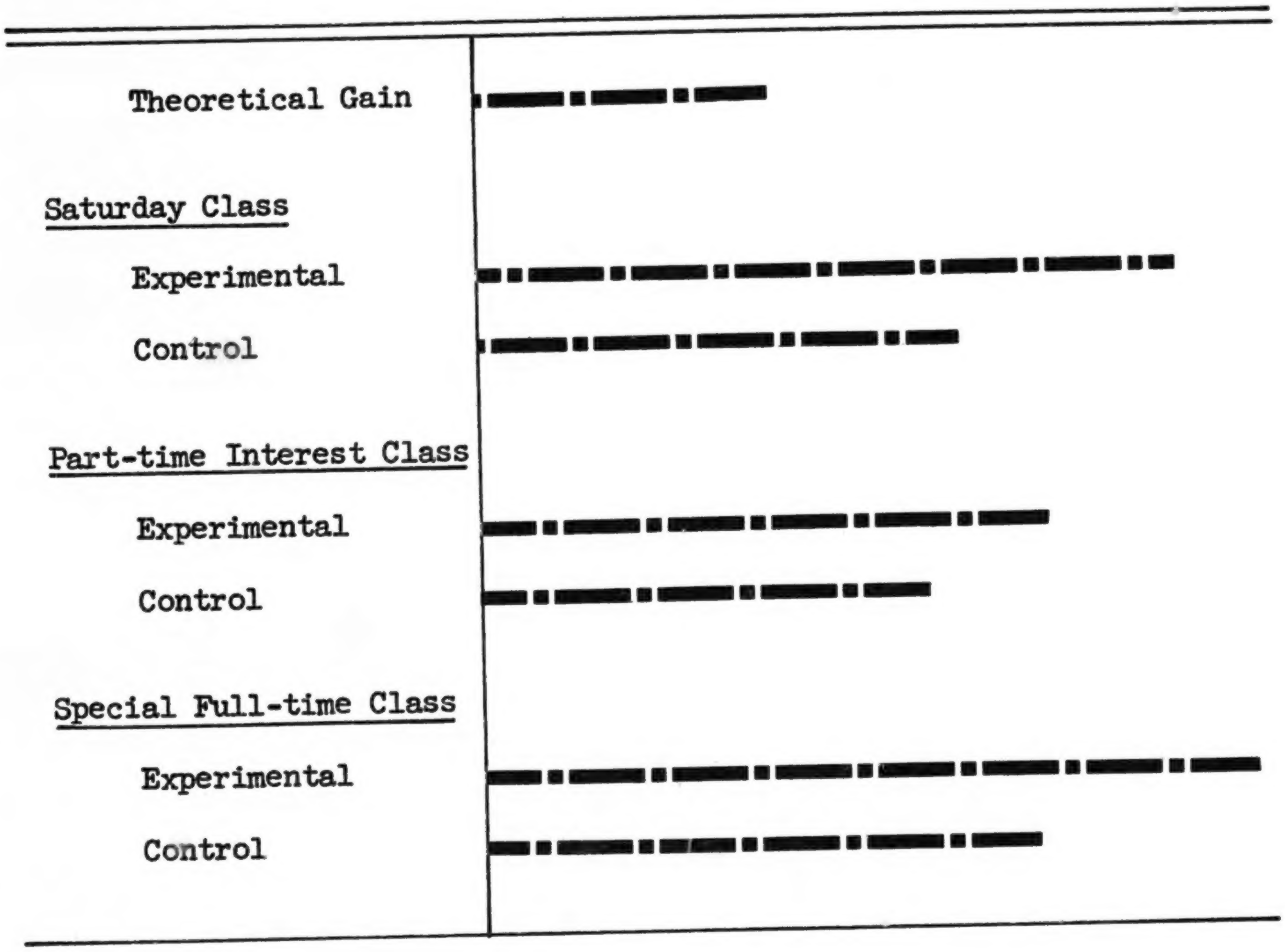

Table 2

PUPIL ACHIEVEMENT IN STATE STUDY

SCORES ON STEP

	Score	Gain
Theoretical Gain		5.3
Saturday Class		
Pretest	270.3	
Post-test	283.1	12.8++
Control Group	276.4	8.8
Part-time Interest Class		
Pretest	270.0	
Post-test	280.4	10.4
Control Group	277.4	8.7
Special Full-time Class		
Pretest	270.8	
Post-test	285.5	14.7++
Control Group	279.0	9.9

++Significant beyond .01 level.

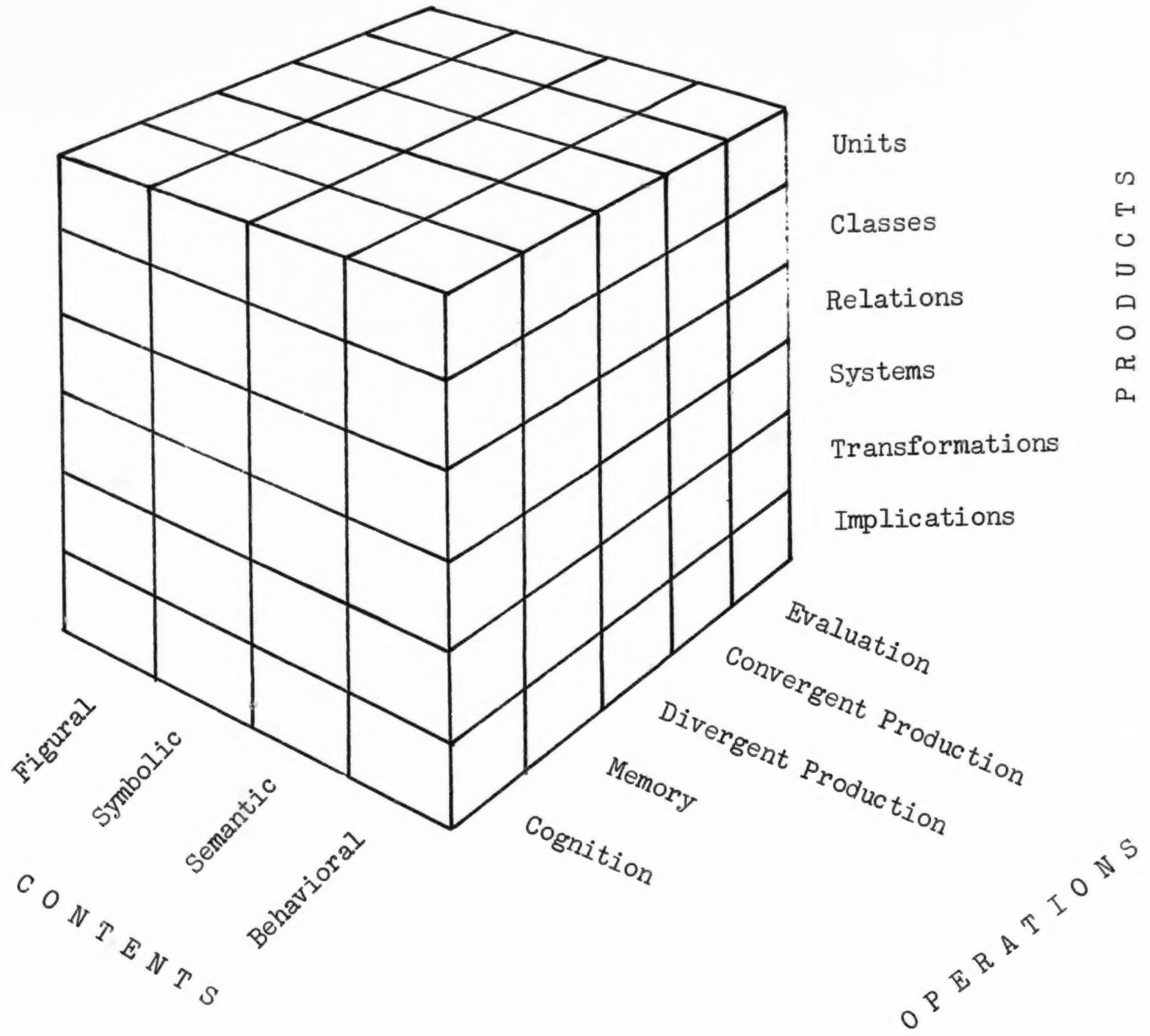
Units
Classes
Relations
Systems
Transformations
Implications
PRODUCTS
Evaluation
Convergent Production
Divergent Production
Memory
Cognition
OPERATIONS
Figural
Symbolic
Semantic
Behavioral
CONTENTS

Figure 1

Theoretical Model for Guilford's "Structure of Intellect"

Department of Psychology
University of Southern California
October 1961

PROJECT TALENT
4
SECTION
CALIFORNIA

Exemplary Projects and Programs

102/103

Learning Systems in Inquiry and Discovery

by

Lawrence V. Willey, Jr., Vice-President
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Chicago, Illinois

Purpose of the Presentation

The purposes of this presentation are to describe a few promising innovations with instructional materials and technology that appear to have potential applications for more able children and to point out a few critical problems which are already apparent that must be dealt with before the new materials and technology can be used effectively. (My ulterior purpose is to excite you about what can be made available to schools during the next few years and to provoke you about how few ideas you have for using effectively new materials and technology.)

Content Improvement

In the past few years, the upgrading of curriculums at junior and senior high schools has spread to elementary schools. Academicians who are experts in subject matter from colleges and universities have become interested in, and are working with, both elementary and secondary curriculums. While the content has improved, practical questions about time, pedagogy, and balance have come up in schools where major curriculum improvement has been underway.

Diagnosis and Evaluation

Rapid data processing equipment is now available for test scoring and analysis. Student schedules, test scores, and course grades are being processed with rudimentary forms of informational handling equipment. Despite the use which many schools are making of data processing equipment, big gains have yet to be made by applying the computer to improve instruction through analysis of results. Adequate objectives, testing instruments, and related curriculum materials already appear to be stumbling blocks to applying sophisticated data processing equipment to diagnosis and evaluation of instruction.

Individualization of Instruction

For many decades educators have boasted about how their curriculums have been geared to meet individual needs of students. Materials have been available to allow teachers to individualize instruction in certain curriculum areas--primarily in skill-building. No doubt, many schools do offer instructional programs which are tied to each student's needs and levels. Nevertheless, the technology that is being developed for schools is forcing educators to take a hard look at what individualized instruction really means. Problems dealing with classroom management, curriculum coordination, and instructional costs are standing in the way before individualization can become a reality.

Systems of Instruction

Systems which are fashionable to talk about in education today include multi-media approaches with bells and whistles. It's pedagogically in vogue to provide for inquiry and discovery in all curriculums at all levels. In spite of the boasts of many educational leaders over what their schools are doing with the latest innovations, two facts appear to be inescapable:

(1) Program development is far more difficult and time-consuming than equipment design and manufacture; and

(2) Systems analysis and establishment in schools is proving to be extremely complicated and limited, due to human factors

If the imaginative curriculum specialist with experience in actual instruction does not step up his contribution with program development and systems analysis, the technology that is being made available to schools will fall short of its potential for improving instruction in schools across this state and nation.

Using Community Resources

By

John M. Huffman, Director
Community Educational Resources
Office of the San Diego County Superintendent of Schools

About six years ago the Department of Education, San Diego County, and the San Diego Industry-Education Council became concerned about finding ways to keep the curriculum up to date. A solution was sought which would enable teachers to present current information to enrich their daily classroom activities. Both the schools and industry recognized this need and agreed that much new knowledge was being discovered day by day in this great age of technology. Textbooks supplied to the public schools could not possibly carry up-to-date accounts of these new technological developments. Upon being contacted, the aircraft industries, the new space exploration industries, the armed services, oceanographic research groups, and community agencies agreed to make resources available for enriching the curriculum.

An advisory committee was formed of representatives from the various industries and educational institutions of the San Diego area. They, in turn, considered the problem and made recommendations as to what might be done to bring community educational resources to the classroom. Thus, the Community Educational Resources Section of the Department of Education, San Diego County, was formed. The section was originally under the direction of Dr. Ronald L. Hunt, now an Associate Director of the Brooks Foundation in Santa Barbara. Dr. Hunt was well qualified for his new post, as he had had extensive experience in industry and was an experienced teacher and a well-trained producer of audio-visual education materials.

The advisory committee met, worked out a plan of organization for Community Educational Resources, and began to assess the various available resources of the San Diego area. One of the very early sources they decided to draw from was the world-renowned San Diego Zoo. Zoo officials were contacted and were found most ready to contribute photographs, information, and assistance which enabled Community Educational Resources to put together teaching materials for distribution to the schools.

From the outset, the U. S. Navy was very generous in its support of the program. The United States Naval Hospital offered its resources for the production of two filmstrips on blood banking and donated hundreds of pathology slides for distribution to the schools by the County Department of Education. From the Naval Training Center and its various training programs, training aids were made available to the Community Educational Resources Section. The Navy has furnished pictures of the submarines that traveled under the polar ice cap, along with pictures taken on the scene at the North Pole of the research group and its activities.

The natural harbor of San Diego makes this an international seaport and brings to us not only the Navy and its facilities, but shipping from all over the world. Near Ballast Point is the new Deep-Submergence Systems Project of the Navy, where men and officers are trained in the operation of undersea research vehicles, the subject of a forthcoming CER module.

The oceanographic tower in the Pacific Ocean a short way offshore may look like an oddity to the children of the San Diego area who have seen it standing out in the ocean. They cannot visit it, but through the resources of the Navy and Scripps Institution of Oceanography, CER was able to take children, via filmstrips, study prints, and wall charts, for a close look at the instrumentation and equipment of the tower.

Through working with the various industries and agencies, we have been able to produce a large number of wall charts and sets of study prints (black and white reference photos) on new developments in oceanographic research. We have developed several filmstrips, describing the oceanographic tower, underwater acoustics, and an introduction to oceanography.

We had made a filmstrip on Project Mohole and had planned to add more materials until the project was halted by withdrawal of funds. We wanted to follow this great scientific endeavor closely and be prepared to keep the children of the county informed of all developments. In the filmstrip, we took the children aboard the staging vessel for the Mohole project, CUSS I. We took them below decks and showed them the scientists analyzing core samples and using the specialized equipment, including the drilling head for cutting through the mantle of the earth. These are the kinds of things the average person would just never get to see, and in many cases, would not be knowledgeable about.

The materials we produce include a bibliography for further study. This is another job of the coordinators of our project. The resource coordinators are usually reading and studying about a project when they are working on it. They develop a great breadth of information on the selected topic through concentrated study.

CER modules have focused on undersea exploration. SCUBA diving techniques have been shown, and will be followed by the module on undersea vehicles, including two which have been in the San Diego area--the bathyscaphe Trieste and Jacque Costeau's diving saucer. Information on undersea vehicles, and on any of the U.S. Navy's activities, can be made available to anyone by the Navy or other oceanograph research institutions.

We developed a filmstrip on undersea exploration in which we featured the sea saucer. The next step in undersea exploration is actually living and working at the bottom of the sea. This we presented in our module on SeaLab II. The module consists of 59-frame, color, sound filmstrip; 40 reference photos; and eight wall charts to help the teacher build a feel of the undersea habitat in his own classroom. Each module is accompanied by a detailed teacher's study guide, a filmstrip study guide, and considerable background information for the teacher.

We show the kind of a habitat in which a man works in the SeaLab. We take the children inside the SeaLab. We show them the seating quarters, dining quarters, working quarters, and personnel. The men are seen in the filmstrip testing new equipment such as a heated diving suit. The SeaLab II wall charts give the floor plan, a top view, a side view, and an overall portrayal of the various projects that were carried out in the SeaLab project. The reference photos, 11 inches by 17 inches, allow the students to have the picture before them with informative extended captions on the back. The teacher also has additional information about each study print and bibliographical references for further study.

Mr. Donald MacLean from our office, who worked closely with the Navy on the SeaLab II module, put the materials together in just 22 working days after the project was completed. Much of his work was done while SeaLab II was still at the bottom of the ocean. Last spring (1966) this module was distributed to all the schools in San Diego County.

In another oceanographic module, types of fishing techniques for the future are demonstrated: the bubble curtain, the electrical field, and the vacuum filter process.

Saline water conversion is covered in an oceanography module describing the saline conversion plant which was previously located on Point Loma and is now at Guantanamo Bay, Cuba.

Nuclear power plants are being built in several locations in the United States. We are working with the local power company to get an inside look at the nuclear power plant at San Onofre in San Diego County for a future module.

Community Educational Resources' materials on space science are in all the schools in San Diego County. The science textbooks in our classroom today contain some information about space exploration but frequently are not up to date. There are textbooks still in use that state it is impossible to build an engine that can power any vehicle into orbit. Think how far behind those materials are. This is a lag that we have tried to beat in producing CER materials.

All of us see television showing a missile on its pad ready to launch, but how many of us can look inside the missile factory and see how that missile was built, what it is made of, and how it is put together? We have produced a filmstrip titled "From Drawing Board to Launching Pad" which does this. Major space vehicle manufacturers have been most happy to provide us with photos, drawings, and information which we have put together in a filmstrip and study guide titled "Birth of a Missile."

Other space materials now in the schools are Manned Exploration of the Moon, Instrumented Exploration of the Moon, Shapes for Speed, covering the supersonic transport and the vertical take-off craft.

Distribution of modules is one package to each school building in San Diego County, including about 450 schools. Modules are distributed free of charge to the schools by the Department of Education, San Diego County.

We started out with projects that were pretty much oriented toward science topics. This was because our initial financing came from National Defense Education Act funds. As you know, this act was set up originally to cover math, science, and foreign language. Now, of course, it has been broadened to cover other subjects, and we are producing materials with social sciences orientation. Two of these are "Human Communication" and "The Great Alaskan Earthquake."

Two coordinators share the task of producing and writing these materials. In the process they learn a great deal not only from reading and study, but from personal contacts with specialists, engineers, and scientists.

Community Educational Resources has also produced several television series on oceanography and space science and is now preparing a series on nuclear energy in cooperation with the American Nuclear Society. The Society is prepared to furnish us with speakers at no charge to prepare the series of thirteen half-hour video tapes to be entitled "Peaceful Uses of Nuclear Energy." Community Educational Resources coordinates and presents the series and the American Nuclear Society furnishes the scientific talent.

The television series are designed primarily as in-service education for teachers, although children themselves benefit from viewing. We also utilize large group seminars for in-service purposes. The series of meetings held in Department of Education facilities on "Peaceful Uses of Nuclear Energy" was effective in-service education in itself, but it went further as it generated the idea for the television presentation.

We use printed material to publicize CER activities--a newsletter, which is people-oriented; and Science Briefs, which are topic-oriented. In the newsletter we report on what people such as those in our Advisory Committee and our Task Groups are doing. We keep readers apprised on what projects are nearing completion. In the Science Briefs, we publish articles by scientists who are saying to us, "I've an idea here that I wish the kids in school knew about." We examine these short treatments with a Task Group, and if we agree that the idea is needed in the curriculum, we ask the author to develop it at length while we work on collecting relevant visual material and developing study guides, suggested experiments, and the like. Another publication is the Library Directory for San Diego County, which makes it possible for students to locate material in any professional, college, or private library in San Diego County. Gifted children who want to pursue an idea and are unable to find materials in their own library can depend on their librarian to know whom to call and where to get the desired materials. Resources not often found in general libraries are available on interlibrary loan from such sources as General Atomic, the Naval Electronics Laboratory, the University of California-San Diego, or San Diego State College.

Our primary goal, of course, is to produce up-to-date materials in various media for use in the classroom. The goal in enriching the instructional program is to make children in our schools interested and excited in discovering new knowledge that they would probably not encounter in organized form for years if they had to wait for its inclusion in conventional textbook form.

Project Discovery

by

John Belforte, Principal
Thomas Edison School
Daly City, California

What is Project Discovery?

For years, educators have postulated what the effect upon teaching and learning might be if, from the earliest school experience, teachers and children could take complete advantage of a concentration of instructional materials and equipment--properly utilized, readily available, and permanently accessible in the local school building.

Would such an environment accelerate and heighten learning. What strengths or weaknesses would be revealed in such a program? What new, improved instructional materials and techniques might be fostered if such a program were subjected to the critical eye of objective research?

Project Discovery is an alliance between business, industry, government, and education. Sponsored by the Encyclopaedia Britannica Education and the Bell and Howell Corporations, supported by the U. S. Office of Education, researched by the Ohio State University in cooperation with four school districts throughout the country--Shaker Heights, Ohio; Terrell, Texas; The Inner-City Target Area Program, Washington, D. C.; and Daly City, California--Project Discovery is designed to test the effects of maximum availability of instructional materials on curriculum and to observe and test behavioral and educational changes.

For a three year period, the entire film and filmstrip library from Encyclopaedia Britannica Education has been placed in each participating school. These include five hundred 16mm films and over one thousand filmstrips, plus new materials as they are produced and released. Bell and Howell has placed a self-threading 16mm projector and an autoload filmstrip projector in each classroom. Other cooperating companies have contributed projector tables, permanently mounted screens, darkening draperies, and remote control attachments. The school districts have continued to expand and develop the school library and have provided a full-time, credentialed librarian. Extra equipment is available for emergencies, and film guides have been provided for each teacher.

Project Discovery Schools

The four school districts which have been selected to participate in Project Discovery have varying geographical, cultural, and socio-economic conditions, with students having relatively high ability and rich cultural backgrounds. Its educational orientation reflects the professional and managerial achievements of the community's citizens. The district expends $800 per pupil, and approximately ninety percent of the students enter a college or university.

Terrell, Texas,represents several socio-economic groups--from rural ranch and unskilled labor groups to high middle and upper income groups, with some reflection of urban living because of proximity to Dallas. There is an approximately equal distribution of Negro, Mexican and white peoples.

Scott-Montgomery School is in a disadvantaged inner-city neighborhood and is one of the model schools in the District of Columbia. It is totally Negro, with family incomes of $3000 per year or less, and thus represents the lowest socio-economic level in an urban setting.

Thomas Edison School in Daly City exemplifies a middle-class, suburban community--an area which has developed rapidly since the war as part of the tremendous population explosion in the San Francisco Bay Region. It is almost entirely residential, there being no industry within the confines of the school district. Students from this middle-class cultural community possess a wide range of abilities.

The varied nature of each school community has allowed each to develop in light of its own needs and educational perceptions. Uniformity is neither desired nor encouraged.

Related Research

A review of the literature suggests that, since its early inception in 1918, a considerable amount of audio-visual research has been conducted with the use of films and filmstrips and their application in the classroom.

Studies in 1929 found that films increased classroom participation and voluntary reading. Thus, early evidence that films did exert a positive influence on academic motivation does exist (Tilton and Rulon).

It was found, in 1952, that films effectively support learnings over a wide range of subject matter content, ages, abilities, and conditions of use (Hoban, Van Ormer,and Meirhenry).

And again, in 1953, it was found that high intellectual levels learn more from films than those of medium or low intelligence. In some cases those of lower tested intelligence appeared to make greater increment in learning--though not enough to surpass the learning gains of the average or superior students (Sister Jamesetta and Herbert Smith).

While considerable research has been undertaken regarding the many facets of film and filmstrip usage and the application of these media to the general teaching-learning act, it should be noted that the studies have been primarily restricted or limited to the junior high school through graduate school levels. There appears to be little or no evidence to support the effects on instructional practices and curricular developments resulting from a complete saturation of audio-visual media in elementary school setting.

Thus, Project Discovery appears to be significant in establishing two firsts in American school history:

- Complete saturation and availability of materials at the elementary school level, and
- Resident research methodologist from Ohio State University.

Research Design

The research possibilities in Project Discovery are numerous--and in their naturalistic setting. It may be worth noting that the research design of Project Discovery is in the nature of a field study. Egon Guba, Research Director (Evaluation in Field Studies, Ohio State, 1965) for the project, defines a field study as "not satisfying the conditions required for experimental research." Field studies are total evaluations. That is, many educational innovations are complex; they consist of a large number of components and it is evident that each of the components can be separately tested. No one would argue that the combination of separately tested and refined components would be sure to work, even though our confidence in a positive outcome is obviously much higher under such circumstances than it would be if the components had not been separately tested. The crucial point to note, however, is that the field test itself is concerned with the entire phenomenon and not with its components, and must therefore be carried out under conditions that not only approximate or simulate reality but that are reality. Field studies are therefore conducted under conditions which C. Ray Carpenter has called "invited interference."

Thomas Edison Library

The unique characteristic of the library is the concept of complete integration of the materials it houses; books, films, filmstrips, records, art prints, study prints, and projectors. Uniform classifications and subject headings apply to all media. The Dewey Decimal Classification System is used. Color banded cards identify each type of media in the card catalog. All media are physically housed on the same shelves and in the same cases. This physical integration psychologically reinforces the multimedia approach to instructional materials and constantly reminds students and teachers that there are many sources of information. A preview room housing projectors with wide angle lenses and earphone attachments adjoins the library. Parent volunteers handle all circulation routines, clerical and housekeeping details. Children check out all their own materials; and all library materials are available for home circulation--including encyclopaedias, reference material, films, filmstrips and projectors.

1965 - 1966 Circulation

Approximately 400 items daily

Films	7,000
Filmstrips	5,000
Art Prints	1,000
Miscellaneous	3,000
Books	42,000

The library is generally non-scheduled, non-routined, with individual children and small groups of children using materials as classroom activities require. Storytelling sessions and formal library skills lessons are scheduled in advance. The librarian devotes full time to professional level teaching and library activities. Thus, she is a consultant to teachers and students, with all teaching oriented to curriculum activities and conducted as a result of teacher-librarian planning. Student work, murals, puppets, masks, paper sculpture, mosaics, and professional art displays are always on exhibition. In this setting, the librarian functions as a catalyst or transfer agent of ideas, methods, and techniques.

The Findings

Findings from the Ohio State Study presented here are part of a preliminary analysis of some data available at the completion of the study but prior to preparation of the final report. The final report will be available through the Office of Education.

Were the Media "Really Available" and "Really Used"?

In a survey of teacher opinion at the close of the school year, teachers reported that materials were "immediately available." Reported short delay situations apparently did not conflict with the dominant view that materials were accessible in a meaningful way.

An analysis of more than 17,000 recorded use of media within the four sites revealed that every teacher used some materials during the year. The "average teacher" for all schools used 60 films and 29 filmstrips in the classroom and previewed an additional 16 films and 5 filmstrips which were not used in the classroom.

These data are minimal, since they represent only uses documented by this study; it is known some classroom and preview use occurred for which no records were made.

Films were used approximately two to one compared with filmstrips, even though the filmstrip libraries were always in excess of the film libraries.

What Were the Effects of This Innovation Upon the Teachers?

Part of the effects were revealed through a survey of all teachers in all buildings at the end of the school year. In this survey teachers reported, among other things:

- A need for more preview time (62%)
- A need for more planning time (48%)
- A desire to learn more about audio-visual materials and techniques (85%)

- New knowledge of teaching techniques and curriculum methods were acquired through observation and use of the materials (80%)

What Were the Effects on Students?

At Edison, all children (K-6) operated all equipment and all material, and equipment was available for home circulation. Book circulation was trebled--and this should be noteworthy, since reading is an expression of the child's total experience. Older children were found to assist younger children, children provided their own narration of films and read filmstrips. Filmstrips enhanced the learning of the more able and of the less capable students.

The following comments are the tentative impressions of teachers:

- Students' fund of general information was increased (92%).
- Oral expression by students was improved (84%).
- Reading interests of students was increased (80%).
- Student vocabulary was improved (76%).

Twenty-two persent of the teachers thought student attendance was improved.

What Were the Effects on Parents?

At Edison, teachers reported that parents were asking questions in curriculum areas regarding the teaching-learning process. Parents also seemed to be interested in school beyond just their child. Four mothers who were volunteer librarian clerks returned to college to pursue librarian or teacher credentials. Families (several) who needed to move for additional room stayed within the immediate school boundaries.

What Were Some "Negative" Aspects to the Project?

It depends on what you mean by "negative." Approximately 35% of teachers asked for no change, while not one of the 148 teachers surveyed checked the possible response "Forget the whole thing." The major change recommended was the addition of more materials (75%).

On the other side, it appeared to the study staff that some difficulties were encountered by all schools in "digesting" this wealth of material and equipment. No school was prepared to perform the logistical job, and each solved the problem in its own way.

Although it cannot be documented at this time, it is apparent that most teachers increased their own workload to preview materials. Teachers in each school district took materials and equipment home on several consecutive weekends to preview as much as possible in as short a time as possible.

Visitors, often unannounced, placed a substantial amount of time and energy burden on the staff.

Implications to Education

- Films, filmstrips, etc., media readily available in the school library, plus the elimination of the necessity for scheduling projectors, will provide impetus to use materials as part of the basic program rather than as a supplementary tool. All teachers used the equipment, and 82% of the teachers permitted students to operate the equipment.

- Elimination of logistical problem of booking media, with a thorough knowledge of the library, will expand creative possibilities of use of materials in every area of the curriculum. Teachers will preview materials and eliminate the "movie house" concept.

- Studies by Romano, Rulon,and Meierhenry were substantiated--that a wide range of resources greatly expediate student learning. This allows for developing greater sophistication in curriculum. Teachers can develop concepts and ideas beyond that which they can verbalize.

- Decentralized libraries with increased housing capacity will be a necessity. Teacher training institutions will need to incorporate instruction in the use of audio-visual materials and equipment and library services in their curriculum methods courses.

A problem which administrators will need to realize and support is the dramatic need for clerical and professional assistance. A school and its teachers could be so inundated with materials that they are literally overwhelmed.

Since learning is multi-dimensional and achieved through a variety of encoding (input) and decoding (output) processes, testing devices (evaluation instruments) will need to be reexamined-- Particularly, the retrieval of information in relation to attitude and value development.

The excitement of sharing our experiences with you reminds me of the kindergarten child who told his teacher, Barbara Lewis:

"This has been more fun than getting dirty!"

Project Prometheus

By

Robert L. Casebeer
Director
Project Prometheus

Project Prometheus created and operated a six-week residential summer school for 200 able high school students from seven southwestern Oregon counties, running from July 11 to August 20, 1966, on the Ashland campus of Southern Oregon College. Project Prometheus has 200 students in residence each summer, drawn from a student population base of 24,312 (1965 figures). The total population living in the 26,980 square miles involved is 312,819 (1964 figures). The Project embraces five intermediate education districts, five private schools, two county units, two union high school districts, and forty-three public high schools as members united in this project. Additionally two regional units of the Oregon Council for Curriculum and Instruction, Southern Oregon College, and the Oregon State Department of Education are intimately involved. A total of fourteen similar educational or administrative agencies were involved in the actual program, as were some thirteen district cultural organizations. The total participating units, both public and private, number eighty-four.

Project Prometheus seeks to mobilize the educational and cultural resources of the seven Southwestern Oregon counties to create an exemplary six-week residential summer school providing differential cultural and intellectual experiences for able secondary students. The Project is also designed to serve as a model program for able students as well as to demonstrate how local cultural and educational resources can be mobilized to implement qualitative educational innovation.

Specifically the major objectives as delimited in the original proposal are four in number:

1) To provide unique cultural and intellectual experiences normally unavailable for such students during the regular school year

2) To demonstrate how regional cultural and educational resources can be mobilized to implement qualitative educational improvement of high school academic programs

3) To develop and to operate innovative inter-disciplinary classes of timely significance

4) To increase, intensify, and broaden the able student's intellectual curiosity and cultural inquiry

The humanistic and social science oriented school employed twenty creative teachers and counselors from six states: Massachusetts, North Carolina, Minnesota, Idaho, Washington, and Oregon. The teachers were drawn from seven different colleges -- Southern Oregon College, North Carolina School of Art, University of Oregon, Mankato State College (Minnesota), Tacoma (Washington) Community College, Shoreline (Seattle, Washington) Community College, and Brandeis University -- from Oregon's Division of Continuing Education, from ten Oregon and Washington high schools -- Riddle, North Bend, Coos Bay, Pacific, Lakeview, Grants Pass, Medford, Crater, Moses Lake (Washington), Shoreline (Seattle, Washington), and Moscow (Idaho) Junior High School.

These teachers created twenty-eight courses which are currently being made into correspondence courses for the Division of Continuing Education of the Oregon State System of Higher Education. The teachers are also preparing teacher resource units for the classes which normally are not taught during high school or during the first two years of a typical undergraduate program. These newly developed courses are listed below under three categories:

Humanities

- Introduction to Mythology
- Modern Man and Mass Literature
- Proposals of Modern Satire
- The Dignity of Man
- The Gothic Tradition in Literature
- Survey of Ancient and Medieval Celtic Literature
- Introduction to Folklore
- Creative Writing: The Short Story
- Ideas in Poetry
- Traditional Values in American Life
- The Promise of the Republic: Comparative Themes of Whitman and Frost

Sciences

- Natural History of Southwestern Oregon
- Animal Behavior
- Genes and Man
- Problems of Conservation of Southwestern Oregon
- Southern Oregon Ornithology
- Zoogeography of the World

Social Sciences

- Amerindian Cultures of North America
- Prehispanic History of South America
- Contemporary Problems of the American Economy
- Geography of the Soviet Union
- Problems of Rural Sociology: The Cumberlands, A Case Study
- Human Manipulation in the 20th Century
- History of China and Southeast Asia
- Survey of Ancient World Powers
- Crisis Politics and the Forces of Change

Copies of the course syllabi and of the teacher resource units will be made available to the forty-eight cooperating high schools, thereby extending the curricular conceptual changes to the individual teachers involved in the actual instruction of 24,314 high school students (1965 student census figures).

The school provided a woven matrix of experience and concept for its student population in a five-strand construct involving lecture-demonstration, conversational dialogue, interdisciplinary classes, cultural experiences in the fine arts, and week-end tours.

Prominent national figures addressed the Prometheans including James Farmer, Robert LeTourneau, Adolf Berle, Fulton Lewis III, Governor Mark Hatfield, and Congressman Robert Duncan. Some twenty-nine regional speakers addressed the Promethean scholars during the early morning Perspective series on subjects ranging form the "Backgrounds of the Folk Ballad" to the "Origins of Race Myth."

The conversational dialogues, called Cultural Conflict Seminars, covered six weekly topics: Ethnocentrism, Urbanization and Human Dignity, Technology and Human Values, Emergence and Aspiration of People in Under-developed Countries, The Conflict Between Liberty and Social Cooperation, and Leadership in a Multi-Cultural World.

Some thirty-nine cultural experiences were available through the evening Horizon series. These experiences included four Shakespearean plays, one restoration drama, two one-man shows, two poetry readings, several band concerts, chamber music recitals,and performances of a regional music festival and institute. A foreign film series was shown as were programs dealing with folk music, kilty bands, art shows,and others.

Tours were taken to Crater Lake National Park, Fort Vannoy Job Corps Center, Kerbyville Museum, Oregon Technical Institute, Rogue Valley Art Association Gallery, Lava Beds National Monument, Jacksonville Museum, the Oregon Shakespearean Festival, Lithia Park, and Peter Britt Music Festival.

The uniqueness of the Promethean concept is at least five-fold dealing with students, teachers, structure, attitude,and cooperation. Specifically, Project Prometheus provided seven counties of a distinct geographic sub-region with an opportunity for regional cooperation, a cooperation which has not been gained in any other way. This cooperation has and will continue to yield positive educational improvement.

Further, the Promethean concept freed creative teachers from the lockstep of both the Carnegie unit and administrative lethargy. The teachers decided what they wanted to teach, structured the courses, chose the texts, and had free rein regarding classroom tactics. The administration made every effort to provide each item of equipment, any audio-visual device, and any instructional aid desired. The freedom to teach innovatively was enhanced by the absence of any grading system or of administrative paperwork. The devotion and dedication of these teachers, handpicked for creativity and intellectuality, was demonstrated in the classrooms according to the weekly free-response evaluations by the Promethean scholars.

Both teachers and counselors contributed to the attitudinal atmosphere which surrounded the six-week program. Student campus life bloomed under a non-restrictive counseling program which promoted student self-direction. The open inquiry evidenced in the classrooms and seminars extended into the informal discussions of the students and provided a vibrant, electrifying curiosity which produced songs, poems, short stories, talent shows, lengthy"bull-sessions," and hours of free reading from the library resources available. This creative approach to life was consciously tempered by student realization of the responsibility of leadership and the interwoven nature of human problems.

The student selection procedures evidenced the concern of Oregon educators that the future decision-makers of Oregon's social activities be given educational experiences commensurate with their responsibilities. Additionally, these exceptional bright students were given the opportunity to know what it was like to be "average,"as the homogeneous grouping provided a distinct social climate unlike the one these students normally occupy. This uncommon release from the tensions and anxieties of leadership refreshed the spirit of the overworked student leaders. The Project also aided students who previously had attempted to merge quietly into the grey background of conformity by helping them achieve that mental set which sits astride the man of vision.

Structurally, the Project provided a Promethean brocade of experience and concept, a welding of the ideas of the Post-Cartesian world with the best tradition of the past. The interwoven relationship of creed and deed provided a cultural emersion unavailable elsewhere. The creation of twenty-eight classes which attempted to break the twenty-five year lag between what we think and what we teach is unique in itself, but when welded together into the education enterprise catch-coded Project Prometheus, the educational impact is increased geometrically, expecially when forty-eight high schools, seven county districts, two major city districts, two regional instructional councils, and seven regional cultural agencies unite to provide quality education for the most able one percent of the student population.

Evaluation of Project:

Baseline data have been collected by researchers at Southern Oregon College, which establishes the average cultural level of the high school graduates of the area. The applications, which include an interview by local school officials, establish a number of significant cultural components. Project students were given a pre-test of varying forms of the Cooperative General Culture Test, Forms A and B. Free response judgments by the participants--faculty and students both--will be broken into relevant components and analyzed for structural and dynamic configurations. Questionnaries, interest surveys, and similar devices are anticipated during the follow-up process. Some attempts to ascertain progression over a period of years will be made; this will include development of satellite activities.

Results

1) The school was conducted during 1966.

2) The General Culture Tests were administered and are being analyzed.

3) Differential experiences, both cultural and intellectual, were provided.

4) Twenty-eight units of study not normally offered at the secondary or lower-division college level were created and field tested during the school term. Teacher resource units are being prepared.

5) Free-response weekly feed-back reports were secured from the students and have received preliminary evaluation.

6) Teacher evaluations of students and of the specific seminars and classes have been prepared.

7) Student responses indicate significant increase, intensification, and broadening of intellectual and cultural curiosity.

8) Some twenty or so satellite activities have become operational, have been submitted as written proposals, or are planned for the foreseeable future. These range from Upward Bound projects to study groups. More details on these activities are available from the Project Center. These activities cover at least three states and embrace colleges, adult education, community colleges, and high schools. Plans involve community cultural activities to an "anti-senioritis" campaign. Additionally some four hundred of the original proposal have been dispatched nationally; the U. S. Office of Education reports that Project Prometheus has been described in at least fifty-five of the nation's papers as well as appearing in several national magazines of a professional nature.

Accelerated Primary - A Demonstration Program in Seattle Public Schools Designed to Challenge Able Primary School Pupils

By

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I. Description of Program

A. The Accelerated Primary is a demonstration program initiated in Seattle Public Schools, September, 1964. It provides the framework for learning experiences which cover more challenging materials in a shorter period of time. The principal aim of the program is to develop, sequentially, the ability to use skillfully the tools for acquiring knowledge, as well as the ability to work and study in an efficient manner.

1. Pupils remain in the primary grades (kindergarten through grade three) three years rather than the regular four years.

B. The quality of the instructional program is a most important single factor in the Accelerated Primary. The emphasis is on providing high quality experiences for the selected students in order that the broad scope of their individual talents may be developed.

1. This objective suggests a program where skilled development depends on the individual's maturation level and is not restricted to grade placement.
2. It emphasizes a program which stimulates purposeful activity, planned to promote personal inquiry, develop good study habits and the ability to work independently.
3. It is an expression of the value placed on allowing freedom to cultivate initiative and individual interests and time to think and plan and investigate.

C. Curricular adjustments for the accelerated pupils are provided through enrichment in both breadth and depth.

1. Through enrichment in depth, the able child studies the same range of topics provided for in the regular second and third grade curriculum, but he is encouraged to delve more deeply into these topics, to read more widely regarding them, and to carry on research activities to a greater degree than the average pupil.
2. Enrichment in breadth provides time and opportunity to explore a variety of topics or activities growing from the child's developing personal interests.
3. Both kinds of experiences are important to the total development of the able child.

        4. Balance is maintained by providing experiences which contribute to intellectual growth as well as well-rounded personality.

        5. Consideration is given to developing certain attitudes and appreciations.

        6. Maximum learning can be accomplished without undue repetition.

    D. Motivation of talented pupils to increased achievement is one by-product of acceleration and enrichment.

        1. How to take advantage of this motivation to develop unusual ability in the most appropriate and effective ways possible becomes the ever-present problem.

    E. Pupils selected are in the top 5 percent of all pupils in academic ability.

    F. Pupils are selected during the second semester of the first grade.

    G. Pupils then return to the fourth grade in schools of their attendance area.

    H. In the original proposal the program was to be continued for a four-year period. By that time the first group of pupils would be in the sixth grade.

        1. It was proposed that modifications and improvements could be made in the program at any time.

        2. If the program creates more problems than it solves before the end of the four-year period, it is to be discontinued.

        3. The third class is now in the program.

    I. The Seattle Schools do not believe that the program can, regardless of how successful it might be, solve all the problems providing a challenge for academically-able pupils.

        1. They do, however, strongly believe that this program should be tried.

II. The Program is Based upon the Assumption that:

    A. Identifiable groups of children with high abilities exist.

    B. These pupils should have different educational opportunities if schools are to provide an educational program which will challenge the maximum ability of each child.

III. Purpose of the Accelerated Primary

    A. Identify and develop pupils of superior ability.

B. Improve their preparation for productivity with experiences more appropriate to their learning capacity, personal need, and anticipated adult role.

C. Develop good study habits and attitudes, learning situations which stimulate and motivate and encourage a desire to learn.

D. Launch such persons into their careers earlier than in the traditional system and as a result provide more time for that career during the most productive years of an individual's life.

IV. Some General Statements About the Program

A. This is not a change in the Seattle Public Schools' philosophy. It has been the philosophy of Seattle Public Schools to give each child the experience to reach the excellence for which he has a capacity and to promote the will to strive for it.

B. All children--the able, the average, and the slow learners--need and are entitled to have learning experiences that help them discover, develop, and enjoy their own unique potentialities. However, equal educational opportunity for all is not synonymous with identical experience.

C. Some gifted children in the primary grades are able to learn more rapidly than even the highest one-fifth of their class.

1. For these pupils acceleration provides a challenge not found in the usual enrichment procedures.

2. The lack of challenges for very able pupils frequently results in the development of poor study habits and attitudes and a general disinterest in school.

3. These pupils can master the skills involved in the basic tools of learning more rapidly than can the average.

D. This form of organization is only the first step in the educational process.

1. The teacher must still teach; the curriculum must still be adjusted to the needs of the children.

E. This organization greatly increases the schools' opportunity to effect a marked improvement in the education of able pupils.

V. History of Acceleration in Seattle

A. Acceleration in a variety of forms has been used in elementary schools as a means of providing for the individual differences of able boys and girls--skipping and double promotion.

B. Acceleration has been less popular since 1950.

  1. It has been replaced by programs of enrichment, subject acceleration, and other programs.

    a. Some of this is due to the change from semiannual to annual promotions.

C. The latest age-grade progress survey showed a .2 percent of the total pupils in grades one through six were accelerated due to double promotion.

VI. Implementation of the Program in Seattle

A. Accelerated Primary centers were established, based upon number of pupils, area, and availability of space.

B. Eligibility for these classes is determined upon criteria developed by the Seattle Public Schools.

C. Teachers and principals evaluate the pupil's eligibility against established criteria.

D. Pupils become eligible after the Elementary Division has approved the application.

E. The Elementary Division notifies the principal as tothe pupil's eligibility, and the principal then notifies the parents.

F. An invitation is then extended to the parents of eligible pupils to attend the Accelerated Primary classes.

G. Principals contact parents individually through a conference and explain the purposes of the program.

H. Principals, teachers, parents, and pupils must recognize that any pupil's classroom placement or assignment is subject to a change at any time such a change is advantageous to the pupil.

VII. Criteria for Selection of Pupils

A. Procedure for identification involves the child, the teacher, the guidance personnel, the parents, and the principal.

B. A variety of tools and techniques are used to select pupils for the Accelerated Primary classes. Each tool has some advantages and some limitations. No one criterian or measure, objective or subjective, is sufficiently discriminatory and encompassing to locate all academically able pupils.

C. Selection tools include intelligence tests, achievement tests, cumulative records, teacher observations, parent observations, health records, information about special achievements, and interests in and out of school, and evaluation of reading ability, effort, citizenship, and creativity.

D. A special effort is made to identify the child who is an underachiever.

VIII. Curriculum

A. The curriculum is that of the second and third grade.

B. The teaching and learning environment in these classrooms is not different from that which should exist in all good classroom situations. This demonstration program, however, does provide an opportunity for the greater emphasis upon the development of the intellectual curiosity, problem solving, critical thinking, creativity, independent work, and basic skills.

C. Use of a wide range of instructional materials. Use of the facilities of the library. Much use is made of reference books of varying levels and difficulty; of science equipment; of maps, globes, tapes; of projection equipment; and of field trips. Open-end assignments and assignments that cover a longer period of time for completion provide excellent opportunities for enrichment. Work oriented. Recognizes the skill of the teacher.

D. The basic reading program is ungraded. These pupils must be given an opportunity to participate in a challenging reading program which provides continuous growth. It combines enrichment with acceleration even beyond the basic readers identified with third grade.

IX. Enrollment Summary	1964-65	1965-66	1966-67
Total enrollment - June	205	171	133
Total enrollment - September	199	168	133
Total applications	356	345	324
Accepted by Elementary Division	286 (80.3%)	240 (70.0%)	200 (61.4%)
Rejected by Elementary Division	70 (19.7%)	105 (30.0%)	124 (38.2%)
Parents said "No"	81 (28.3%)	7 (29.6%)	66 (33.0%)
Estimated Total City First Grade Enrollment	7,585	7,270	7,152
Percent Boys	48%	45%	36.1%
Percent Girls	52%	55%	63.9%
Percent of Applicants Enrolled in Program	58%	49%	41%
Percent of Total City First Grade Enrollment	2.7%	2.3%	1.9%
Schools with no Applicants	13	14	22

Parents who decided not to have their children participate in the program did so for the following reasons:

1. Transportation problems
2. Satisfaction with the present school program
3. General opposition to acceleration
4. Reluctance to take children out of the neighborhood groups
5. The first year of summer school requirement

X. Evaluation

A. Responsibility of the Accelerated Primary Committee

    1. Elementary school principals

B. Evaluation instruments

    1. Achievement tests
    2. Mental maturity tests
    3. Physical fitness tests
    4. Student attitude scale
    5. Questionnaire
        a. To parents
        b. Accelerated Primary teachers
        c. Fourth and fifth grade teachers who had accelerated primary pupils in their classes

XI. Some Observations Based upon Two Years of Experience

A. Pupil identification procedures for eligibility are adequate but could be improved for the investment of more time and funds for testing, interviewing, and evaluating.

B. Pupil attendance is above the district average in spite of transportation problems encountered by accelerated primary pupils.

C. Academic achievement continues high.

D. Physical fitness was considerable higher than that of other pupils in the same age group during the first year, but in the second year this was lower.

3

E. High pupil interest and motivation were sustained all year.

F. Parents were enthusiastic and most cooperative. They were willing to endure some inconveniences to have their youngsters in the program.

G. The program generates greater-than-average pressures for some pupils to achieve.

H. Some pupils experienced difficulty in their initial fourth-grade experience.

I. It is evident that more involvement of fourth-grade teachers in the program is highly desirable to facilitate better transition from the center to the neighborhood schools.

J. The total number of pupils enrolled in the accelerated primary classes has decreased each year.

XII. Summary

A. All information we have is positive.

B. Perhaps it should be.

   1. Able pupils with an able teacher

C. Just now we have our first information which offers some comparison.

D. Not sufficient as to what this means

E. Considerable lack of acceptance on the part of some teachers and principals

F. Program was started when the majority of classes lacked ample, flexible organization for meeting individual differences.

   1. Since the beginning of this program, great strides have been made to provide flexibility in the primary grades.

G. Final evaluation must recognize the relationship of the Accelerated Primary Program to the emerging, flexible elementary schools.

The Role of Student Response Systems in the Development of the Gifted

By

Peter Dean
Director of Development
EDEX Corporation

I have a number of items that I wish to discuss with you today, all of which are interrelated, and all of which contribute to a common set of goals. The first of these items has to do with the basic nature of the teaching-learning process as we now understand it.

A great deal of research has been done on the nature of education, to the end that we now have some answers and know the nature of some of the problems for which we do not have answers. The model of this process which I would like to use is, as are all models, necessarily less than complete and certainly not intended to be considered gospel. Nevertheless, just as the physical scientist uses a model in order to plan experiments and to gain a further understanding of the truth, so we in education may use models for similar purposes. In my model, education is pictured as a three-event, recurring process. These events are: first, an experience; second, an evaluation of that experience; and, third, an additional experience whose nature depends upon the results of the evaluation continued in step 2.

There are many, many different kinds of educational experiences which we provide. Indeed, most of that which has been discussed during this conference has had to do with the provision of meaningful experience to talented youth. It is not my intent, nor do I think it necessary, to review various ways and means of providing educational experiences. An experience may range from a student's listening to a teacher or another person making a simple declaration of fact through extremely sophisticated multi-media audio-visual presentations and laboratory activities. There is really only a single requirement based upon the nature of an educational experience. That requirement is that the experience must be meaningful to the learner. Thus, if a student is asked to read textual material which contains words and phrases which he does not understand, the experience is not apt to be meaningful. Similarly, if a student is shown a demonstration or a motion picture and he does not understand the nature of that which he sees, an experience has not occurred--at least, not in the sense that I am using the term. It is the function of those individuals called teachers to arrange meaningful experiences for students.

My principal concern has to do with the second step in the learning process--that is, the evaluation of the effect of an experience on the learner. There are a lot of different ways of conducting such evaluations. However, unless an evaluation does occur, the chances of learning are grossly diminished. Note that both the instructor and the student must be aware of the results of this evaluation. The nature of the evaluation is basically very simple. The requirement is that the following question be answered: Was the effect of the experience on the learner and the interpretation of the experience by the learner that which was expected? In other words, was the experience as seen through the eyes of the student the same as that seen through the eyes of the instructor?

I am reminded here of the first grade student who came home after school one day and asked his mother, "Mommy, where did I come from?" Whereupon, the parent swallowed, and, being a good modern parent, launched into the appropriate version of the birds and bees for first graders. At the end of this discussion, the first grader allowed as how this was very interesting but that Susie from down the street came from Kansas City and he wanted to know where he came from. Clearly, the parent's understanding of the experience was different from that of his child.

When in the course of conventional classroom activity, the teacher asks a student to respond to a question, the teacher is evaluating that student's interpretation of the collective learning experiences provided up to that point in time. When a language teacher listens to a student actively using a language laboratory, he, too, is making an evaluation of that student's previous learning experiences. So, too, is the science teacher reading a laboratory report, or the English teacher reading a theme.

I wish to suggest that the procedure I am advocating does not differ in material form from that used by instructors since the days of Socrates, but, rather, differs only in quantity. During instruction, as it is currently conducted in our schools, an individual student may be called upon to recite only once or twice a week. The rest of the time he listens passively while someone else performs. In the case of the special population we are considering at this conference, I suspect that the total number of recitals per week is somewhat greater, inasmuch as these students are academically successful and are prone to volunteer whenever the opportunity presents itself.

Student response systems are devices designed to accomplish three, perhaps four, different tasks. These are (not necessarily in order of importance) to provide the teacher with a real time feedback concerning group performance, to provide every individual in the class a frequent opportunity to measure his own progress, to provide the teacher an opportunity to measure every individual's progress very frequently, and to provide motivation to every individual in the class to attend to events in the class 100 percent of the time.

The operation of the student response system is relatively straightforward. The instructor asks questions, which are answerable by means of a button selection. Each student has at his learning station a small keyboard such as the one I am showing you, by use of which he indicates his response to the teacher's question. The teacher has at his location a set of meters whose deflections indicate the overall response of the entire class. He may also have a set of controls which will permit him to score points for individual answers. The questions which the teacher asks should be questions which the students will answer correctly if they have "properly" evaluated the educational experiences provided, or if previous experiences are similarly appropriate.

The effect of the use of such a system is startling. The level of individual attention sharply increases because each student in the class knows that he is going to have to answer a question about everything that goes on in class. The individual may no longer daydream in the back of the room and trust to statistical chance that he will not be called on, because he knows that he is going to have to answer every question that the teacher asks; and, furthermore, that his individual response is being recorded. He is, I assure you, strongly motivated to participate. Because the instructor has immediate knowledge of overall class performance, he is able to tailor the events in the class according to the specific requirements of that group. If the group is fast and learning well, he can pick up the pace and deepen the penetration of his instruction. On the other hand, if a significant portion of the class is having difficulty, he can slow down and otherwise adjust the pace of his presentation. Because the instructor has a record of each individual's performance, he is able to separate his group on the basis of performance and provide more meaningful activity for every individual. Students who are doing well can be directed to more advanced experiences, and arrangements may be made to provide specific remedial experiences for those who are having difficulty.

With the student response system, a group of talented youngsters may move quickly through required basic experiences and thus be provided with more time for creative creativity. Indeed, it is possible, as we will attempt to show you this afternoon, to completely automate the presentation of experiences so that such instruction may be provided when the student is ready for it. We have built student response systems capable of serving 500 students at one time and systems designed for use by small groups. In the systems designed for large groups, information about individual performance is so structed as to be immediately available for computer analysis and processing. Using modern data processing equipment and student response systems, it is possible to collect a data base for each individual student in the school of such size as to permit meaningful individualization of instruction.

Student response systems are not limited to single rooms, either. For instance, it is possible to use student response systems in conjunction with either broadcast or closed circuit educational television systems. In these applications, an instructor at a central location may provide meaningful learning experiences to students at a number of remote locations and, at the same time, each of the students will answer each of the instructor's questions, and the instructor will receive a real time indication of how well learning is progressing. For the first time there is available a possibility of true two-way instruction involving television techniques.

When I took my first course in education, I had an old professor who started us off with a set of cliches about education. I am sure that you have heard these over and over again; yet,their basic truth somehow remains unexploited. The one I have particularly in mind is, "Telling isn't teaching." And that, I think, pretty well summarizes the basic reason student response systems have been developed.

The Design of a Man-Machine Counseling System[1]

By

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System Development Corporation

Introduction

The work that I wish to describe has as its major objective the design, development, implementation, and evaluation of a man-machine system for counseling. By a man-machine counseling system, I mean a computer-based counseling operation that does basically two things: (1) If it has been properly designed, the system lets the computers and their peripheral equipment take care of processing and transmitting information (this is what they were designed to do); and (2) it thus frees the human beings in the system--the counselors--to be human and to facilitate human growth and awareness in the students they care about.

Human beings are capable of caring, understanding, being with, valuing the student's intuition and freedom of choice. Machines are not. Human beings can help students to value their own reactions to experiences and to choose to have those experiences that are personally relevant. Machines can not.

Current practice rarely allows the counselor to do this. Counselors are increasingly being caught up in the information-processing part of the job. They are involved in acquiring, recording, reporting, searching, processing, and transmitting information. Less and less time is being devoted to helping students to listen to--and trust--their own inner struggles, creative stirrings, and potential for responsibility and decisions.

I will discuss our work at System Development Corporation in relation to two headings: Our earlier initial explorations in computer-assisted counseling and our current work on the design of a man-machine counseling system.

Initial Explorations in Computer-Assisted Counseling

Our initial work was partially supported by the Educational Media Branch of the U. S. Office of Education under NDEA Title VII.[3] In these first efforts we wanted to accomplish two major objectives: To show that much of what counselors currently do can be characterized in an information-processing model and to demonstrate that a computer could be validly modeled to perform the information-processing task.

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[1] The research and development projects described herein were partially supported by Grant 7-14-9120-217 and Contract OE-6-85-076, Office of Education, U. S. Department of Health, Education and Welfare.

[2] This presentation was made by Dr. Cogswell at the California Project Talent Western Regional Conference on November 16, 1966.

[3] See Cogswell, J. F., and Estavan, D. P., "Explorations in Computer-Assisted Counseling," System Development Corporation document, TM-2582/000/00, 6 August 1965, 29 pp.

We first selected a counselor in the Palo Alto School District and obtained a sample of his work with 20 ninth-grade students. His work processes were divided into two steps for purposes of analysis: (1) appraisal of the data in the student cumulative record prior to the interview; and (2) conduct of the educational planning interview.

The counselor was instructed to think aloud as he read through the data in the cumulative folder, analyzed the data, and formed hypotheses about the student. His verbalizations during this task were recorded, as were the dialogues between counselor and student in the educational planning interview.

The recordings were then transcribed and analyzed. A model of the counselor's decision rules in the folder appraisal task and another model of his behavior in the interview were defined for computer simulation.

The cumulative folder appraisal program was written for the Philco 2000 computer. This program accepts as inputs the data in the cumulative folder--grades, aptitude test scores, parents' occupations, and so forth--analyzes these data, applies the programmed decision "rules" abstracted from the counselor's verbal behavior, and selects output statements such as the following:

> "Student's grades have gone down quite a bit. Ask about this in interview. Possibly there are personal problems."
>
> "Student should be watched closely. He will probably need remedial courses."
>
> "Student is a potential dropout."
>
> "Low counseling priority. No problems apparent."

The automated interview program was written for use on the Q-32 computer. Experience gained in formulating the folder appraisal program was helpful in the development of the automated interview; however, the latter program does not utilize data generated on the Philco 2000 but instead performs an independent folder inspection. In this interview, student-program interaction takes place through the medium of a teletypewriter connected to the computer. (Appendix A provides the actual printout of an interview that was conducted during the evaluation study described below.)

The interview goes through the following procedures. First, using conventional computer-based programmed instruction techniques, the student is given a 5-minute lesson on the use of the teletype. Next, the student's cumulative folder record is inspected, and the machine types out the student's courses and grades for the last semester and asks the student to indicate courses in which he is having problems. If the student specifies problem courses, the machine asks him to type, in his own words, a description of the problem for each course. These descriptions are stored on magnetic tape and later are printed out on an off-line printer. The printouts are sent to the counselor.

After the student has described his problems, the machine asks him whether he would like to stop the interview and see his counselor or whether he would like to continue. If he continues, his goals are then explored. The machine asks if the student plans to go to college, and if so, the program assists him in selecting the type of college he hopes to attend. If he does not choose college, the student and the computer explore other alternatives in order to establish the student's vocational interests.

Following the selection of college or vocation, the machine assists the student in determining his college major or otherwise specifying his exact field of interest. The student is then given a printout indicating his probable grades in high school and his chance of success in his chosen activity. These predictions are based on statistics accumulated by the Palo Alto School System.

The machine then requests that the student select courses for tenth, eleventh, and twelfth grades. The computer evaluates the student's choices and advises him regarding required courses, appropriate course loads, and the relevance of his electives to his chosen major.

Throughout the interview, records are kept by the program, and based on the student-program interaction, messages are composed for printout and transmittal to a counselor at the conclusion of the interview.

After development of the automated interview, a study of the validity of the model was conducted: A teletype was placed in one of the junior high schools in Palo Alto and connected by phone line to the Q-32 computer in Santa Monica; and 40 students, randomly selected from the 1964-65 ninth-grade class, were given the automated counseling interview on the teletype. In addition, the data from the cumulative records were read into the Philco 2000 computer and were analyzed by the program that simulated the counselor's appraisal behavior.

Twenty of the students had their records analyzed by the same counselor whom we had originally studied; they were also interviewed by the counselor. The remaining 20 students had their records analyzed by a second counselor and were interviewed by him; the data from these analyses and interviews enabled us to make some estimate of the generalizability of the automated routine.

The findings indicated that the automated cumulative data appraisal program produced 75% of the same substantive statements that the counselors produced. A simple correction to one of the rules in the program would have greatly decreased the error.

The automated interview and the human interview were comparable in respect to the colleges selected, the major selected, and the evaluation of the "appropriateness" of the students' choices. Beyond that, the study indicated that the automated procedures for helping the students to select courses for high school would require further development to provide the same service as the counselors. There were no marked differences between the two human counselors.

After all 40 students had been given the automated interviews and had been interviewed by one of the two counselors, their attitudes toward the humans and the machine were studied by standard interview questions. There were no marked preferences for either machine or human as far as the group of students as a whole was concerned. However, there were marked individual differences. Some students clearly preferred the machine. Others preferred the counselor.

In short, our early work[4] led us to conclude that a significant portion of what counselors are now doing is the processing and transmitting of information and that computers can be used to perform at least a part of this task. Our findings increased our hope that much of the burden of processing and transmitting information could be transferred to the machine and that the counselors could be freed to be more humanistic. We were led to push our explorations further.

Current Work in the Design of a Man-Machine Counseling System

Our current work on the design of a man-machine counseling system is being supported by the Division of Adult and Vocational Research of the U. S. Office of Education.

The study, which will take from three to five years, is divided into three phases:

- The initial Design Phase, which will focus on the specifications for the man-machine system
- The Development and Implementation Phase, during which machines will be installed at a field site and the operating procedures will be developed
- The Evaluation Phase, in which the changes to the system will be evaluated

Funding has been obtained for the first phase.

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[4] In the work just described, people who participated other than the authors were: John Loughary, Oregon System of Higher Education; Robert Hurst, and Donald Friesen, University of Oregon.

The Initial Design Phase

The first phase includes six steps: (1) an initial survey of counselor practices; (2) sllection of an experimental field site; (3) system analysis of the counseling operations in the field site; (4) training of the counselors in system technology; (5) design specifications for the Man-Machine Counseling System; and (6) laboratory development of limited software systems.

Survey of Counselor Practice. Eighty-seven counselors from 12 different educational settings were interviewed to obtain a picture of the variation in counseling practice from installation to installation. In addition, each counselor described, by using a set of Q-sort cards, how he was actually spending his time and how he would ideally like to spend his time. The educational settings included vocational high schools, trade schools, junior colleges, and academic high schools.

Analysis of the Q-sort data indicates that there are no significant differences, between one site and another, in the kinds of responses as a whole. However the data do indicate a marked difference between what the counselors are doing and what they would like to do: As a group they would prefer to reduce greatly the amount of time that they must devote to routine information processing tasks such as registration, schedule changes, program requests, analysis of routine data, recording of data, report writing, collecting and updating occupational information and test administration. They would prefer to be able to increase the time they devote to working with students in such activities as "helping students, through group and individual counseling, to explore their problems, feelings, and courses of action." They would like more time for following up their students, working with administrators in improving curricula to meet the needs of students, and conducting research. They would like to see an increase in the use of data processing equipment, presumably to lift the information-processing task from their shoulders.

The findings from the survey support our belief that counselors are forced to spend too much time with information-processing chores; that, ideally, they would like to change their activities in the humanistic direction of working more with students directly or indirectly; and that they would like to alter the system to better meet the needs of the students.

Selection of the Experimental Field Site. After the collection of survey data, an experimental field site was selected. We chose as the focus for our experimentation a large high school/junior high school complex in the Los Angeles School District. The high school has a population of 5,000 students and 10 counselors; the junior high has 1,800 students and five counselors.

System Analysis of Counseling Procedures. A detailed description of all of the counseling procedures employed at this school complex was obtained by interviewing all of the 15 counselors.

General flow of procedures for each of the two counseling subsystems was defined. In addition, the idiosyncratic functions and procedures of each counselor were described. These descriptions were reviewed by the counselors to clear up omissions and misconceptions.

Training of Counselors. After the system analysis, the counselors came to System Development Corporation for three, two-hour workshops on advanced information-processing technology. The purpose of the workshops was to teach the counselors about the kinds of functions that could be performed by advanced information-processing technology. We wanted them to be aware of the possibilities so that their thinking in the design phase would not be limited by lack of exposure to the technology. We presented a number of demonstrations of automated interviewing, automated teaching, and on-line computer applications in information retrieval. Discussion and readings were combined with the demonstrations.

The Initial Design Workshops. When the training was completed, the counselors and the four experimenters worked together in formulating the specifications for the initial model of the man-machine system.

The research staff met for 21 hours with the high school counselors and for 12 hours with the junior high counselors. A consultant from the National Training Laboratory--Dr. Gerard Haigh--attended most of the meetings with the high school counselors and focused his attention on facilitating the communication process during the design work. He was effective in keeping the group from fracturing, in increasing the involvement and participation of all of the members, and in strengthening the group process. The last design day was conducted as a 12-hour marathon with the high school counselors. The research staff considered this procedure extremely effective, although they had been skeptical at the beginning. A strong group feeling developed between the counselors and the researchers, and the design ideas that emerged were identified as the product of the total design team rather than ideas of the researchers or of the counselors. One evidence of the group feeling was the reluctance experienced by group members about breaking up the group at the beginning of the summer vacation period.

A number of ideas for the system were developed in the design workshops. Briefly they are as follows:

- Storage of all student data in the computer for ready processing and retrieval
- Tracking and monitoring of student progress to alert counselors to possible problems
- On-line generation and application of multiple regression formulas for predictive and research analysis
- Automated generation of all routine reports such as grade reports and progress reports

- Automated interviews to help students in the areas of post-high-school planning, course programming, and vocational exploration

Laboratory Development of Systems. Laboratory demonstrations of some of these information-processing procedures are being developed. Work is currently progressing on the development of the information storage and retrieval system and on an automated interview for exploring occupations and related educational requirements.

Our design work with the counselors will resume in the fall.

Development, Implementation, and Evaluation

In the spring of 1967 the specifications for the Model I machine and human functions will be crystallized into a proposal for the second phase of the project. In this phase the information-processing applications will be developed and implemented. The counselors will be trained in system procedures; in addition, a counselor training program, including sensitivity training, will probably be developed and used to strengthen counselor skills in the human aspects of their work. The counselors will then use the system and evaluate it.

When the system has been implemented and is operating smoothly, the final evaluation data will be collected for the project's third phase.

It is hoped that both the system development procedures employed in this study and the operational innovations will provide a useful model for the development of man-machine counseling systems in other installations.

APPENDIX A

COPY OF SAMPLE INTERVIEW

```
YOU ARE ABOUT TO PARTICIPATE IN AN INTERVIEW WITH AN
AUTOMATED COUNSELOR.
THE COMPUTER WILL HELP YOU PLAN WHAT YOU WANT
TO DO IN HIGH SCHOOL AND IN LATER LIFE.
BUT FIRST, JUST TO LET THE COMPUTER KNOW YOU ARE THERE
PLEASE TYPE THE LETTER  A  AND A CARRIAGE RETURN
(RED KEY ON THE RIGHT-HAND SIDE OF THE KEYBOARD).

**** A
GOOD...
THE MOST IMPORTANT KEY IS THE  CR  KEY (RED KEY ON THE RIGHT).
YOU WILL USE IT TO LET THE COMPUTER KNOW THAT YOU HAVE MADE
AN ANSWER.  JUST FOR PRACTICE, TYPE THE LETTER  B  AND  CR (RED KEY).

**** B
OK.....
SOMETIMES YOU WILL BE ASKED TO ANSWER A YES OR NO QUESTION.
WHEN YOU ARE, JUST TYPE  YES  OR  NO  AND A CR
DON'T FORGET THE CR.
LET'S TRY IT.  HERE IS A QUESTION---
ARE YOU IN CALIFORNIA NOW?
PLEASE TYPE YES OR NO.

**** YES
FINE..

MANY OTHER PEOPLE ARE USING THIS COMPUTER RIGHT NOW.
ONCE IN A WHILE THE COMPUTER WILL HAVE TO TAKE CARE OF THEIR
URGENT NEEDS.  WHEN THIS HAPPENS, YOU MAY FIND THAT YOU
HAVE TO WAIT A MOMENT OR TWO.  DON'T WORRY, THE COMPUTER WILL
COME BACK TO TAKE CARE OF YOU AS SOON AS IT CAN.
WHEN YOU HAVE READ THIS, TYPE  OK  AND  CR.

**** OK
GOOD.
BY NOW YOU HAVE NOTICED THAT BEFORE YOU TYPE AN ANSWER,
THE TYPEWRITER TYPES STARS LIKE THIS-

****
THIS IS TO LET YOU KNOW THAT IT IS TIME FOR YOU TO TYPE
SOMETHING.  YOU SHOULD NEVER TYPE ANYTHING UNTIL AFTER THE STARS
ARE TYPED OUT BY THE COMPUTER.
DO YOU UNDERSTAND?
PLEASE TYPE YES OR NO.
```

```
**** YES
ANOTHER VERY IMPORTANT KEY IS THE  /  OR  ''SLASH'' KEY.
IT IS THE GREEN KEY ON THE BOTTOM RIGHT OF THE KEYBOARD.
LOOK FOR THE  /  KEY (GREEN KEY).  WHEN YOU FIND IT,
TYPE  /  AND  CR.

**** /
SOMETIMES YOU WILL HAVE TO TYPE MORE THAN ONE LINE AND THE
COMPUTER CANNOT TELL IN ADVANCE HOW MANY LINES YOU WILL TYPE.
IN SUCH A CASE, YOU WILL LET THE COMPUTER KNOW THAT YOU HAVE
FINISHED BY TYPING  /  AND  CR.
WHAT YOU TYPE WILL LOOK SOMETHING LIKE THIS---

****  1

****  2

****  /

LET'S TRY IT.
TYPE  1  AND  CR,  2  AND  CR, AND  /  AND  CR.
(WAIT FOR THE STARS.)

****  1

****  2

****  /
FINE..

PLEASE TYPE YOUR ID NUMBER AND A CR

****  42
ONE MOMENT, PLEASE.

IS YOUR NAME DEBORA ANDERSON

****  YES
ACCORDING TO MY RECORDS THIS IS HOW YOU DID LAST SEMESTER.
  CODE    COURSE            GRADE
    1   P.E.                 A
    2   ENGLISH 1            A
    3   GENERAL SCIENCE      A
    4   EUROPEAN HISTORY     C
    5   ALGEBRA              B
    6   SCHOOL SERVICE       A

IS THIS CORRECT?  IF SO, TYPE  YES  IF NOT, TYPE  NO
```

```
**** YES
ARE YOU HAVING ANY PROBLEMS WITH ANY OF THESE COURSES?
PLEASE TYPE YES OR NO.

**** YES
TYPE THE NUMBER OF EACH COURSE THAT IS GIVING YOU TROUBLE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

**** 4

**** /
WHAT KIND OF PROBLEM DO YOU HAVE WITH EUROPEAN HISTORY
PLEASE TYPE IN THE NATURE OF THE PROBLEM.  A FEW WORDS WILL BE O.K.
WHEN YOU ARE ALL FINISHED, TYPE  /  AND  CR.

**** I DON'T TURN MY WORK IN ON TIME./
I SEE...
IF YOU WOULD LIKE TO DISCUSS THIS PROBLEM FURTHER,
MAKE AN APPOINTMENT TO SEE YOUR COUNSELOR.

WOULD YOU LIKE TO CONTINUE WITH THIS INTERVIEW AT THIS TIME, OR WOULD
YOU LIKE TO DISCUSS YOUR PROBLEMS WITH YOUR COUNSELOR BEFORE YOU CONTINUE?
TYPE  GO  IF YOU'D LIKE TO CONTINUE.  TYPE  STOP  IF YOU'D LIKE TO STOP.

**** GO
DO YOU PLAN TO CONTINUE YOUR FORMAL EDUCATION BEYOND HIGH SCHOOL?

**** YES
WHICH OF THE FOLLOWING IS MOST LIKE THE SCHOOL YOU PLAN TO ATTEND?
1  IVY LEAGUE COLLEGE
2  OTHER COLLEGE OR UNIVERSITY
3  CALIFORNIA STATE COLLEGE
4  JUNIOR COLLEGE
5  BUSINESS OR VOCATIONAL SCHOOL
6  I HAVE NOT YET DECIDED
TYPE THE APPROPRIATE CODE.

**** 3
DO YOU INTEND TO MAJOR IN ENGINEERING OR ONE OF THE SCIENCES?
PLEASE TYPE YES OR NO.

**** YES
HERE ARE SOME AREAS OF SCIENCE AND SOME EXAMPLES

    CODE      AREA                          EXAMPLES
     1    PHYSICAL SCIENCES.....PHYSICS, CHEMISTRY, GEOLOGY, ETC.
     2    BIOLOGICAL SCIENCES...BIOLOGY, PRE-MED, PRE-NURSING, ETC.
     3    SOCIAL SCIENCES.......PSYCHOLOGY, SOCIOLOGY, ANTHROPOLOGY, ETC.
     4    MATHEMATICS...........MATH, STATISTICS, COMPUTER PROGRAMMING, ETC.
     5    ENGINEERING...........ARCHITECTURE, DRAFTING, ELECTRONICS, ETC.
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PLEASE TYPE THE CODE NUMBER OF THE KIND OF SCIENCE YOU INTEND
TO MAJOR IN.

****  3
ALL RIGHT.  LET'S SEE IF WE CAN PINPOINT YOUR AREA
    1    PSYCHOLOGY
    2    SOCIOLOGY
    3    ANTHROPOLOGY
    4    SOCIAL WORK
TYPE THE APPROPRIATE CODE.

****  1
OK.....
THE GRADES YOU GET IN HIGH SCHOOL LARGELY DETERMINE THE TYPE OF
COLLEGE YOU WILL BE ABLE TO ATTEND.
LET'S JUST TAKE A LOOK AT YOUR PROJECTED HIGH SCHOOL GRADES
BASED ON YOUR PRESENT PERFORMANCE.
STUDENTS WHO GOT GRADES LIKE YOURS IN JUNIOR HIGH,
DID AS FOLLOWS AT CUBBERLEY---

   70 PER CENT EARNED  A OR B
   20 PER CENT EARNED  C+
   10 PER CENT EARNED  C

ON THE BASIS OF YOUR PROJECTED GRADES, YOUR PRESENT COLLEGE CHOICE
INDICATES THAT YOU ARE THINKING PRETTY REALISTICALLY ABOUT YOUR
FUTURE LIFE.

NOW THAT WE'VE GOT SOME IDEA OF WHAT YOU'D LIKE TO DO
AFTER HIGH SCHOOL, LET'S LOOK AT YOUR HIGH SCHOOL COURSE PLANS.
IN THE 10TH GRADE, THE REQUIRED COURSES ARE---

   ENGLISH 2
   CONTEMPORARY WORLD HISTORY AND GEOGRAPHY
   PHYSICAL EDUCATION

WHAT OTHER COURSES WOULD YOU LIKE TO TAKE NEXT YEAR?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE  YES.
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE  NO

****  YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.
```

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**** 70

**** 93

**** 111

**** /
OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

   ENGLISH 2
   CONTEMPORARY WORLD HISTORY AND GEOGRAPHY
   PHYSICAL EDUCATION

   FRENCH 1
   MATH M 1
   BIOLOGY 1

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE  YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE  CHANGE

**** YES
OK.....
THAT LOOKS LIKE A PRETTY GOOD 10TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

**** NO
OK.....
AT THE 9TH GRADE YOUR PROJECTED 11TH AND 12TH GRADE SCHEDULE IS
CONSIDERED TO BE TENTATIVE.  FIRM DECISIONS CAN BE MADE
ONLY ON THE BASIS OF YOUR YEAR BY YEAR PERFORMANCE.
WHAT YOU DECIDE TO TAKE IN THE 11TH AND 12TH GRADES
WILL BE GOVERNED LARGELY BY WHAT IT IS YOU WANT TO DO AFTER
HIGH SCHOOL.  SINCE A PERSON'S PLANS TEND TO CHANGE OVER A
PERIOD OF TIME, YOU SHOULD SEE YOUR COUNSELOR TOWARD THE END OF
YOUR 10TH YEAR IN ORDER TO EVALUATE YOUR 11TH AND 12TH
GRADE PROGRAM IN THE LIGHT OF YOUR CURRENT GOALS.

ALTHOUGH WE WILL BE TALKING ABOUT TENTATIVE PLANS, WHICH YOU WILL BE
ABLE TO CHANGE, LET'S LOOK AT YOUR HIGH SCHOOL COURSE PLANS AS
YOU SEE THEM NOW.

LET'S THINK ABOUT THE 11TH GRADE.

THE REQUIRED COURSES FOR THE 11TH GRADE ARE---

   ENGLISH 3
   U.S. HISTORY
   P.E.
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WHAT OTHER COURSES WOULD YOU LIKE TO TAKE IN THE 11TH GRADE?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE  YES.
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE  NO

****  YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

****  71

****  96

****  43

****  /
OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

    ENGLISH 3
    U.S. HISTORY
    P.E.

    FRENCH 2
    MATH M 25
    CREATIVE WRITING 1

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE  YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE  CHANGE

****  YES
OK.....
THAT LOOKS LIKE A REASONABLE 11TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

****  YES
GOOD.  TYPE THE CODES OF THOSE COURSES YOU WILL TAKE IN THE SUMMER.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

****  130
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**** /
ALL RIGHT.  THAT MEANS THAT IN SUMMER SCHOOL YOU WILL TAKE---

   DRIVER EDUCATION
NOW LET'S THINK ABOUT THE 12TH GRADE.
THE REQUIRED COURSES FOR THE 12TH GRADE ARE---

   GOVERNMENT 2
   PHYSICAL EDUCATION

(ENGLISH 4 IS NOT REQUIRED, BUT YOU MAY WANT TO TAKE IT.)

WHAT OTHER COURSES WOULD YOU LIKE TO TAKE IN THE 12TH GRADE?
LOOK AT THE LIST OF COURSES.
WHEN YOU HAVE DECIDED WHAT COURSES YOU WANT TO TAKE, TYPE  YES.
IF YOU CAN'T MAKE UP YOUR MIND AT ALL TYPE  NO

****  YES
GOOD.
TYPE THE CODE NUMBER OF EACH COURSE YOU WANT TO TAKE.
TYPE  CR  AFTER EACH NUMBER.
WHEN YOU ARE ALL THROUGH, TYPE  /  AND  CR.

****  72

****  64

****  /
OK, HERE IS THE PROGRAM YOU HAVE PROPOSED

   GOVERNMENT 2
   PHYSICAL EDUCATION

   FRENCH 3
   GIRL'S WOODWORK  S

ARE YOU SATISFIED WITH THIS PROGRAM?
IF SO, TYPE  YES
IF YOU WOULD LIKE TO CHANGE IT, TYPE  CHANGE

****  YES
OK.....
THAT'S A PRETTY GOOD 12TH GRADE PROGRAM.
DO YOU ANTICIPATE TAKING ANY SUMMER COURSES THAT YEAR?

****  NO
IT IS A GOOD IDEA FOR ALL COLLEGE BOUND STUDENTS TO TAKE 4 YEARS
OF ENGLISH.  GIVE THIS SOME THOUGHT.
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(Last page)

I HOPE THIS INTERVIEW HAS PROVIDED YOU WITH SOME INFORMATION
TO THINK ABOUT IN PLANNING YOUR HIGH SCHOOL PROGRAM.
IT'S BEEN NICE INTERACTING WITH YOU.
   THANK YOU, DEBBIE
THIS IS THE END OF THE INTERVIEW

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